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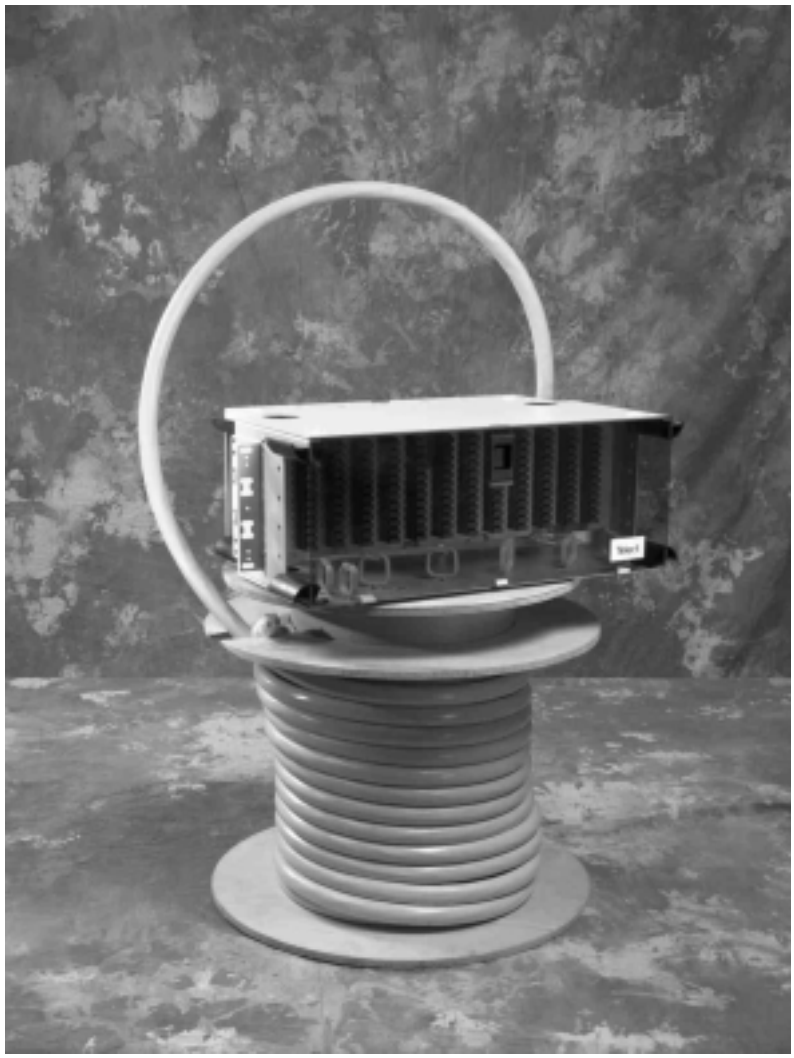

LCX FIBER PATCH/SPLICE PANEL
USER MANUAL

126254
Issue A Rev 0

LCX Fiber Patch/Splice Panel User Manual
Document Number 126254 Issue A Rev 0
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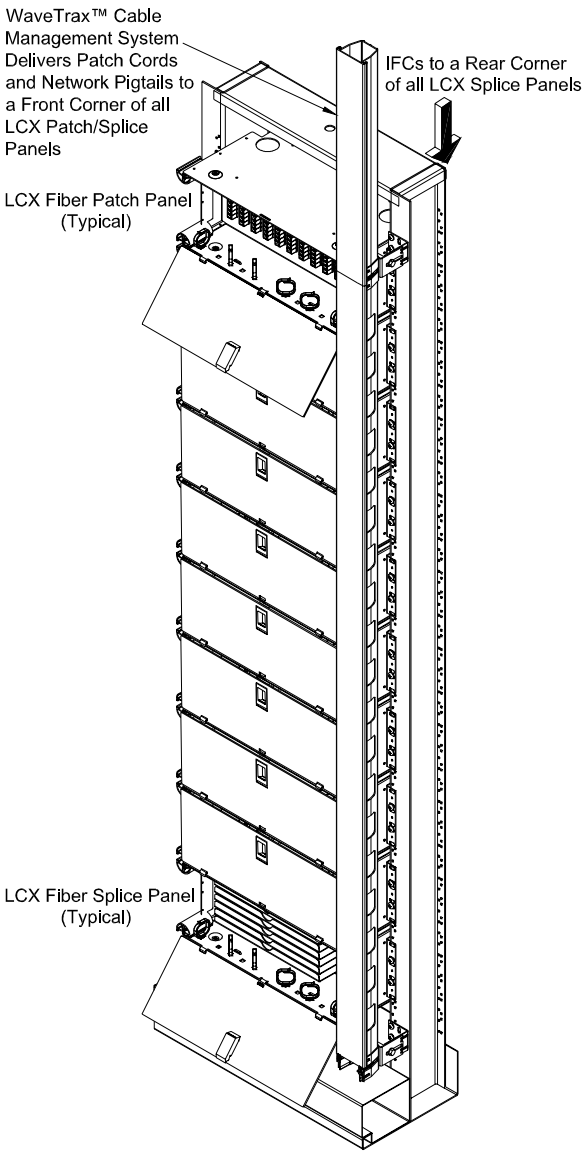
1 Descriptions

LCX FIBER PATCH/SPLICE PANEL SYSTEMS


WaveTrax™ Cable Management System Delivers Patch Cords and Network Pigtails to a Front Corner of all LCX Patch/Splice Panels
IFCs to a Rear Corner of all LCX Splice Panels
LCX Fiber Patch Panel (Typical)
LCX Fiber Splice Panel (Typical)

LCX Fiber Patch/Splice Panel System (Total Solution)

Telect's LCX Patch/Splice Panel Systems provide inter-connectivity and cross-connectivity of riser/plenum and network element fiber cabling. Panels provide a central location for patching, splicing, testing, troubleshooting, monitoring, and restoring service to fiber optic systems.

LCX panels fit standard 19-in. and 23-in., EIA/WECO and ETSI racks. 4RU and 5RU panels support up to 144 terminations.

LCX Patch Panels and Splice Panels provide a total solution as well as standalone splice and patch capabilities. All Telect LCX panels are system compatible with standard LGX® style panels, thereby serving as replacements or add-ons in system solutions of other manufacture.

Telect offers LCX Panels uncabled, or with convenient pre-cabled patch cabling of any length. Patch adapter terminations include ST, SC, FC, SC APC, & FC APC.

Uncabled LCX Patch Panels are also available with or without fiber adapters; Telect offers adapter packs with 6 or 12 adapters per pack for on-site configuration. Unadapterized 3RU & 4RU LCX Patch Fiber Panels also accept standard Wavelength Division Multiplexing (WDM), splitter, and monitor modules.

Features

Telect manufactures LCX Patch Panels and Splice Panels to suit any system architecture. Features include —

- Designed for compliance (fiber bend radius control, flammability safety, structural reliability). NEBS 3 and ETSI certificationl.
- Zone 4 Seismic reliability.
- Light weight.
- Splice tray easily removed for rapid termination of cable.
- No cassette required. Trays provide for easy and direct storage and splicing.
- Removable front and rear doors.

Capacities/Capabilities/Suitability

- LCX panels are available for universal 19-in., 23-in., and ETSI racks.
- 48, 72, 96, or 144 terminations per panel (from 3RU to 5RU).
- Standard-size 6 or 12 adapters per pack for on-site patch panel adaptation of unadapterized panels.
- ST, SC, FC, SC APC, FC APC single-mode and multimode adapters.
- Standard-size Wavelength Division Multiplexing (WDM) and splitter modules can be used along with adapter packs for added fexibility.
- All LCX Patch/Splice panels are fully compatible with standard LGX® style panels for IFC entrance, splicing, and network patching architecture.
- All LCX panels are compatible with Telect's WaveTrax cable management systems, as well as those of other manufacture.
- Slip-on, split arcs standard for patch cord entrance; optional kits available with hangers, hooks, and arcs to suit operating company preferences.
- Precabled Patch Panels — Any length of cable.

Benefits

Telect's LCX Splice/Patch Panels are ideal for central office, head-end and wiring centers. Benefits include —

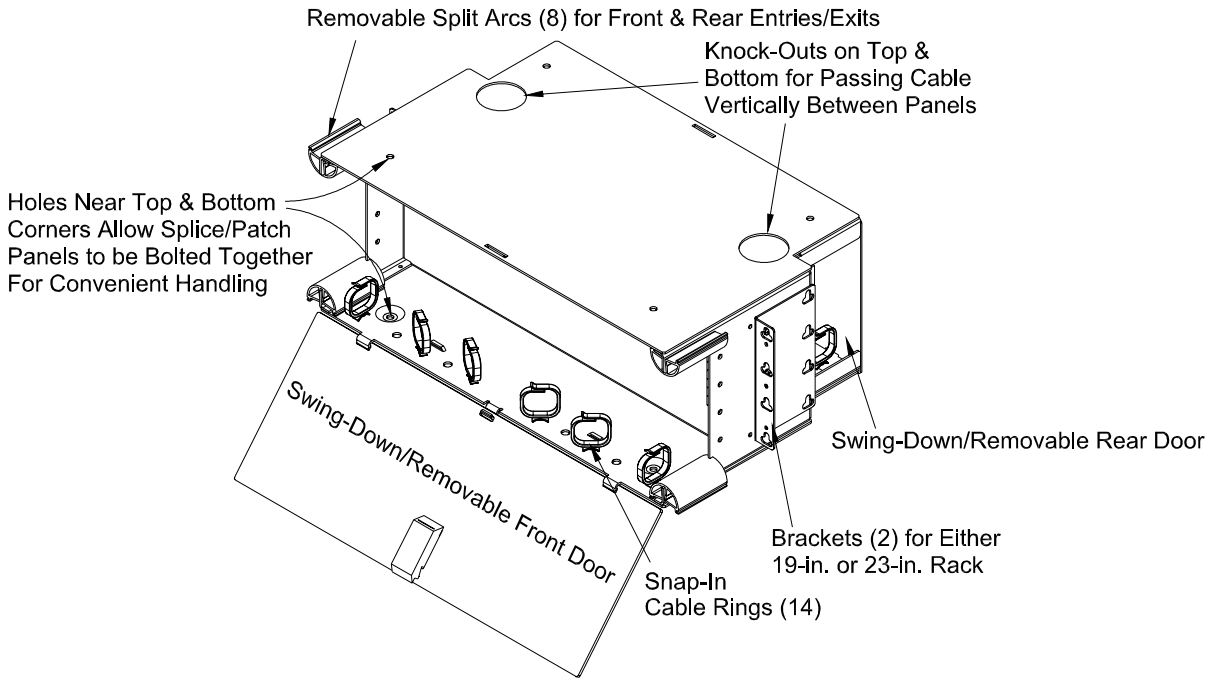
- Low cost — High Fiber Density — Versatility.
- Easy Installation.
- Simple, straight-forward cable management, access, circuit identification and isolation.

- Easy access to riser/network/patch cord interconnections and cross-connections.
- Compatibility.

LCX FIBER PANELS

Telect manufactures LCX Fiber Splice Panels and LCX Fiber Patch Panels of various densities to suit company-wide fiber splice, patching, and routing requirements.

All LCX Fiber Panels are metal chassis (3RU, 4RU, and 5RU) with hinged/removable front and rear doors — shown in the following illustration. All panels include cable entry from "outside the rack" near the four corners of the panels. Knock-out holes at the top and bottom of the panel allow for routing from splice panels to patch panels (and between patch panels) vertically within the rack. Hole pattern and positions are compatible with panels offered by other manufacturers, allowing expansion and replacements of those systems using Telect's low-cost LCX panels.


Removable Split Arcs (8) for Front & Rear Entries/Exits
Knock-Outs on Top & Bottom for Passing Cable Vertically Between Panels
Holes Near Top & Bottom Corners Allow Splice/Patch Panels to be Bolted Together For Convenient Handling
Swing-Down/Removable Front Door
Swing-Down/Removable Rear Door
Brackets (2) for Either 19-in. or 23-in. Rack
Snap-In Cable Rings (14)

LCX Fiber Panels (Common Physical Features)

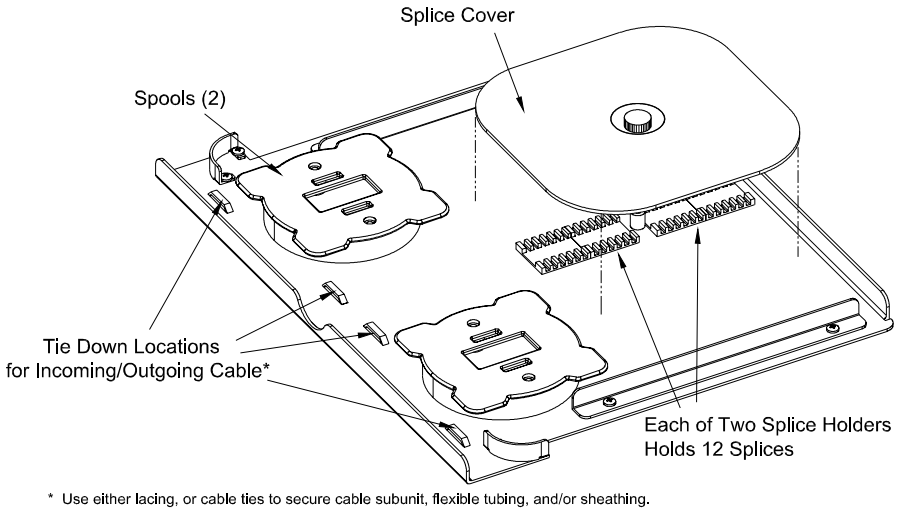
Interconnection and cross-connection cabling from above or below enter at the two front corners of each Telect LCX panel via radius control arcs, hangers, or hooks. Eight split arcs are standard with each panel. These slip over the edges of the chassis to protect cable entrance and control radius bends within compliance requirements. Telect also offers three optional

kits to satisfy cable management practices requiring arcs, hangers, or hooks to separate and isolate groups of fiber cables.

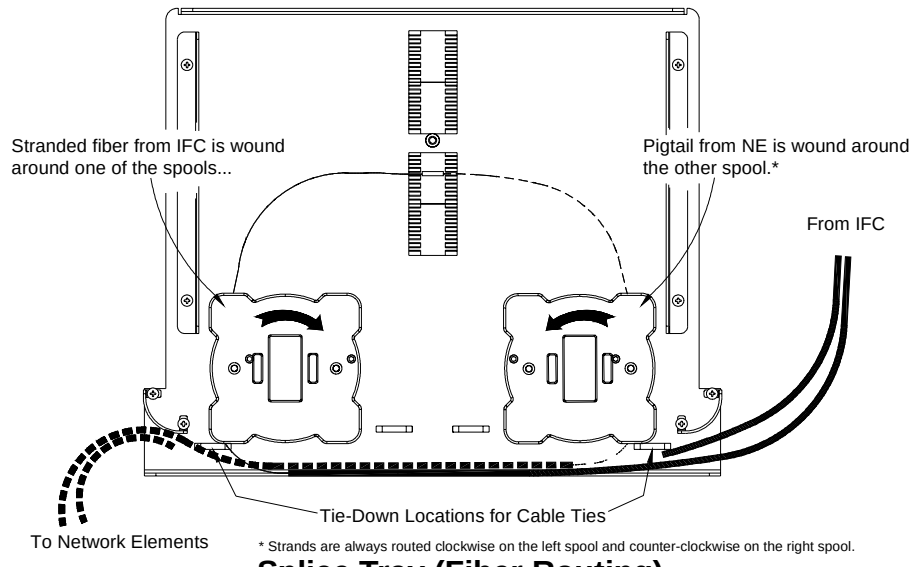
LCX Fiber Splice Panel

Each splice tray, shown below, holds up to 24 splices along with 1½ m of fiber cable storage below the tray for each subunit and interconnect cable.

Trays easily slip free of the panels to allow splicing. Storage spools and splice holders are mounted directly on the tray, eliminating the need for special splice cassettes.


Splice Cover
Spools (2)
Tie Down Locations
for Incoming/Outgoing Cable*
Each of Two Splice Holders
Holds 12 Splices
* Use either lacing, or cable ties to secure cable subunit, flexible tubing, and/or sheathing.

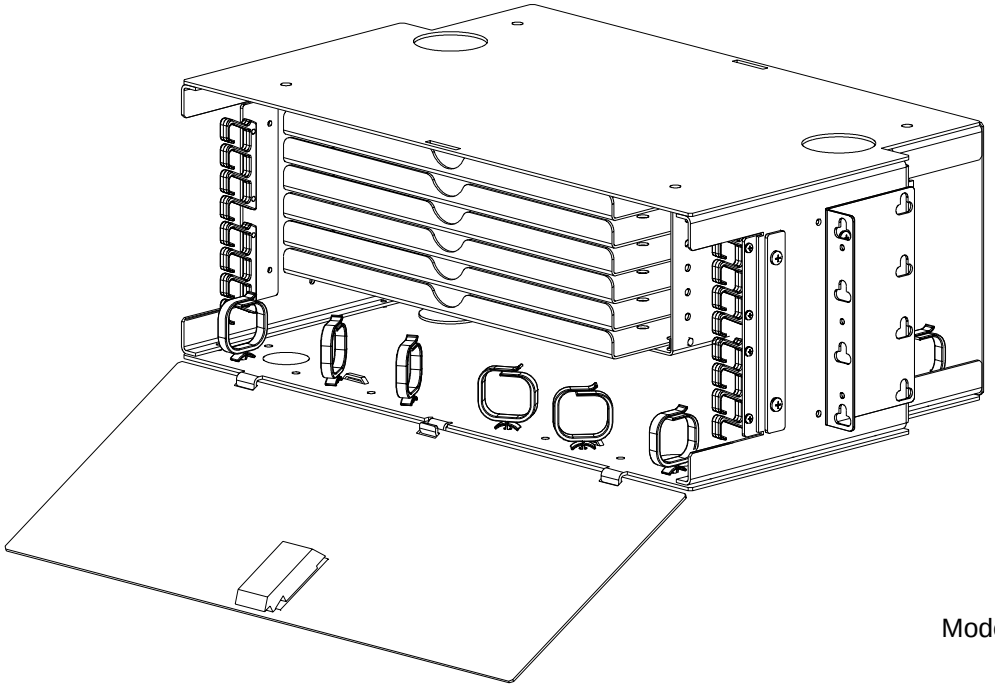
Splice Tray (Right Corner View)


Stranded fiber from IFC is wound
around one of the spools...
Pigtail from NE is wound around
the other spool.*
From IFC
Tie-Down Locations for Cable Ties
To Network Elements
* Strands are always routed clockwise on the left spool and counter-clockwise on the right spool.

Splice Tray (Fiber Routing)

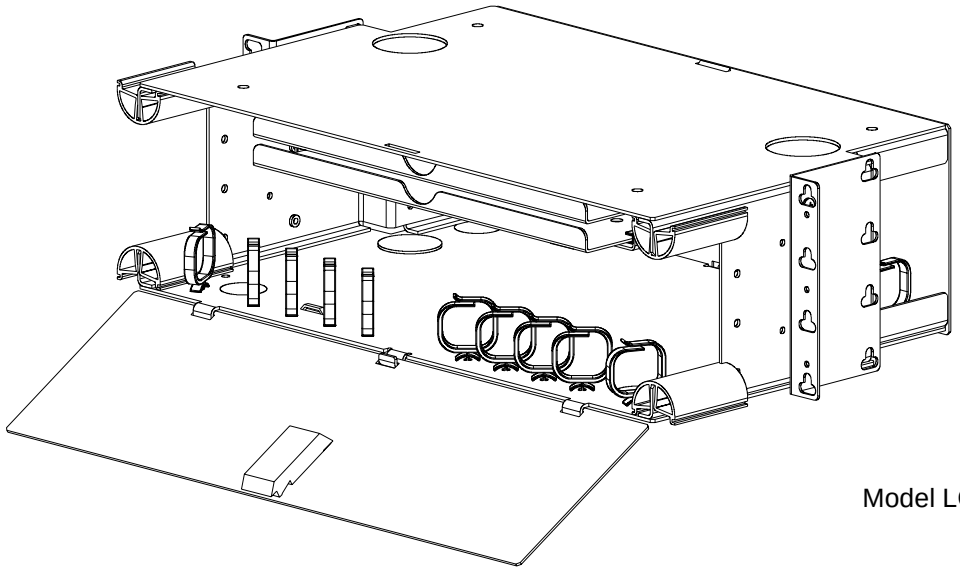
The following illustrations show termination capacities of LCX Fiber Splice Panel:

- 48-splice, 3RU LCX panel contains 2 splice trays
- 72-splice, 4RU LCX panel contains 3 splice trays
- 96-splice, 4RU LCX panel contains 4 splice trays
- 144-splice, 4RU LCX panel contains 6 splice trays



Model LCXS141

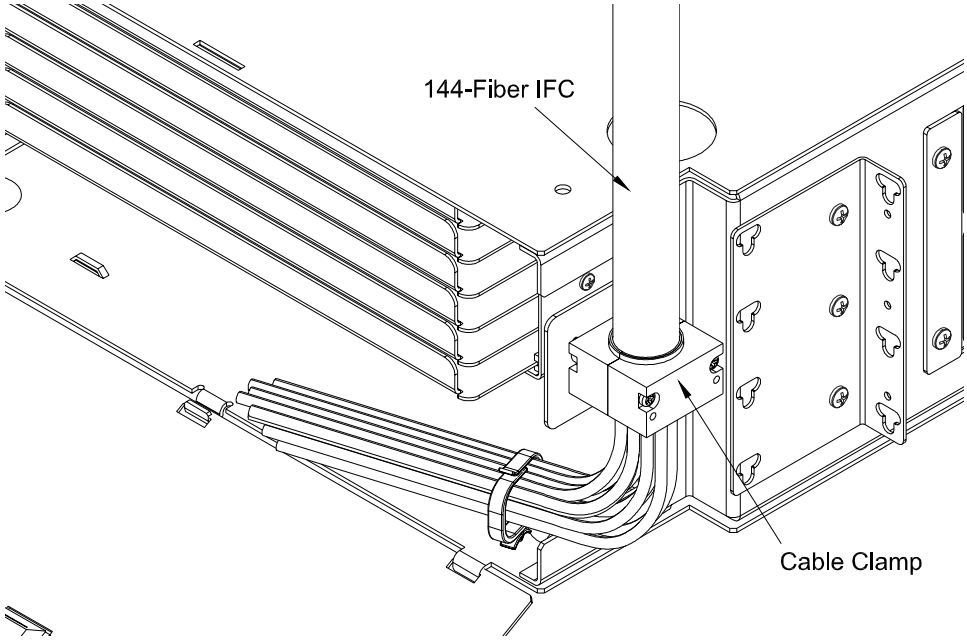
LCX Splice Panel — 4RU — 72 to 144 Termination Capacity
(Shown With Maximum of 6, 24-Splice Trays & Optional Entry Hooks)



Model LCXS481

LCX Splice Panel — 3RU — 48 Termination Capacity
(Shown With Standard Split Entry Arcs)

IFC stranded cable from the splice vault is secured at either rear corner of of the LCX Splice Panel by an optional cable clamp. (A single clamp fits all sizes of IFC riser and plenum cable.) The following illustration shows a clamp holding a 144-strand IFC cable installed at the left rear corner of an LCX Splice Panel.



Optional Cable Clamp Fits All Sizes of IFC

Cable rings in the rear portion of the panel lead the IFC tubes to one of the front corners of the splice trays. The interconnection cables enter the tray at the other front corner of the splice tray.

LCX Fiber Patch Panel

LCX Fiber Patch Panels come in four capacities with or without fiber adapters:

- Page 1-7 shows four termination capacities of LCX Fiber Patch Panels with factory-installed adapters.
  - ◊ 48-termination, 3RU LCX Patch Panel with factory-installed adapters.
  - ◊ 72-termination, 4RU LCX Patch Panel with factory-installed adapters.
  - ◊ 96-termination, 4RU LCX Patch Panel with factory-installed adapters.
  - ◊ 144-termination, 4RU LCX Patch Panel with factory-installed adapters.

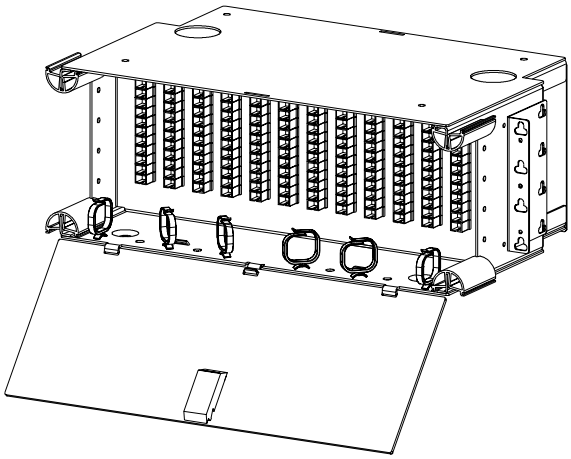
  All are available with SC, SC/APC, FC, FC/APC, or ST single-mode

adapters. LCX Fiber Patch Panels can be ordered pre-cabled with pig-tails for quick setup, network patching, and startup.

- Page 1-8 shows patch panels with similar termination capacities for use with adapter packs and special-function modules that can be configured on-site:
  - ◊ 48-termination, 3RU LCX Patch Panel for on-site installation of adapter packs or special-function modules.
  - ◊ 72-termination, 4RU LCX Patch Panel for on-site installation of adapter packs or special-function modules.
  - ◊ 96-termination, 4RU LCX Patch Panel for on-site installation of adapter packs or special-function modules.
  - ◊ 144-termination, 5RU LCX Patch Panel for on-site installation of adapter packs or special-function modules.

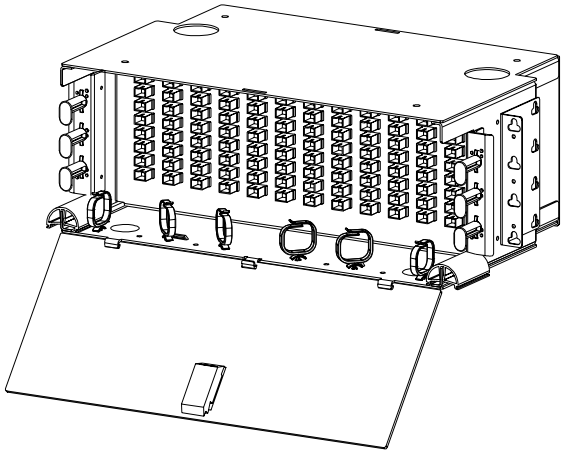
  Each adapter pack contains 6 or 12 adapters, depending on the height of the intended unadapterized panel; the adapters are mounted to a standardized patch plate that snaps into the LCX bulkhead separating the front and rear compartments of the panel.

  Telect offers adapter packs with SC, ST, FC, SC (Duplex), FC Angled Polish, SC Angled Polish, FC-SC, and ST-SC single-mode and multi-mode adapters. The illustrations on Page 1-9 show SC adapters mounted to patch plates for use with 3RU, 4RU, and 5RU LCX Fiber Patch Panels.



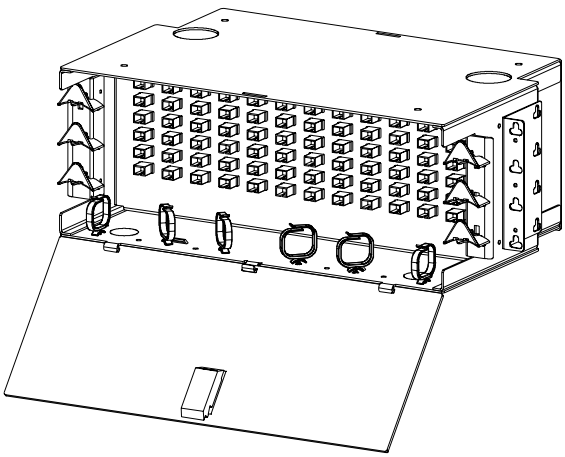
Model LCXP141SCU

LCX Patch Panel — 144 Terminations
(Shown With Standard Entry Arcs)



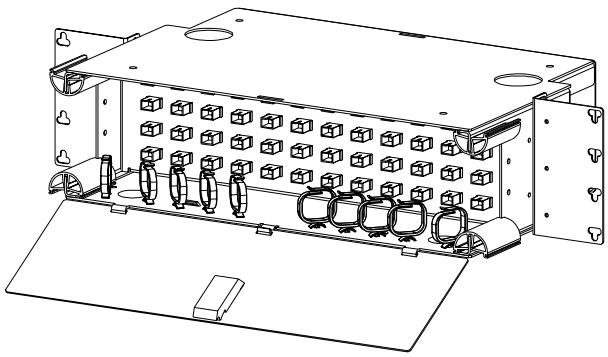
Model LCXP961SCU

LCX Patch Panel — 96 Terminations
(Shown With Optional Entry Hangers)



Model LCXP721SCU

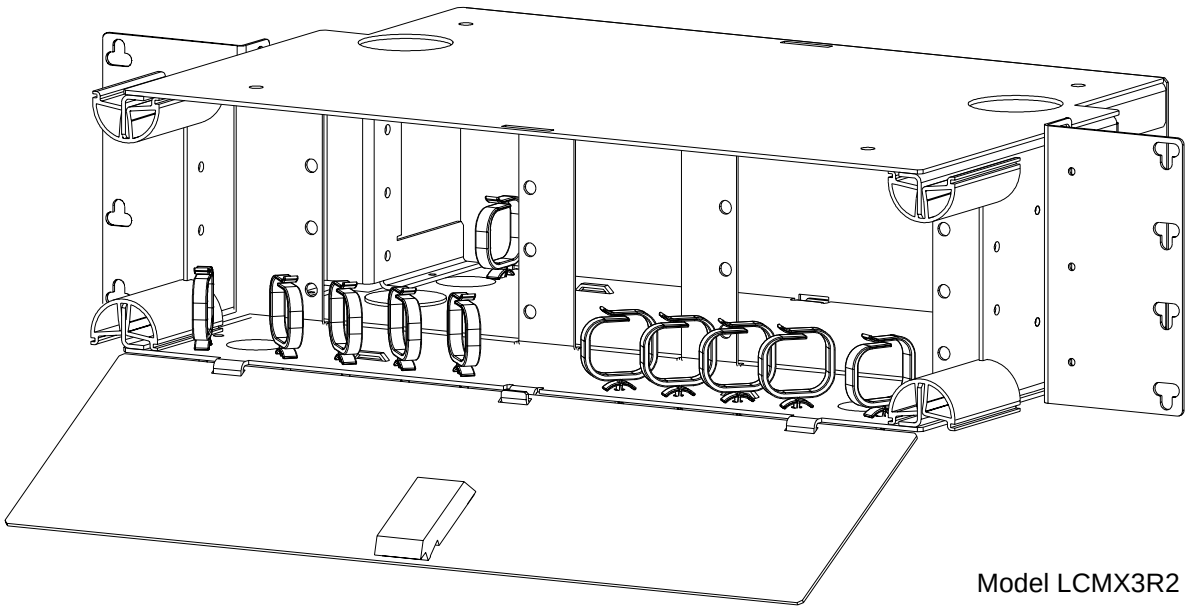
LCX Patch Panel — 72 Terminations
(Shown With Optional Entry Arcs)



Model LCXP482SCU

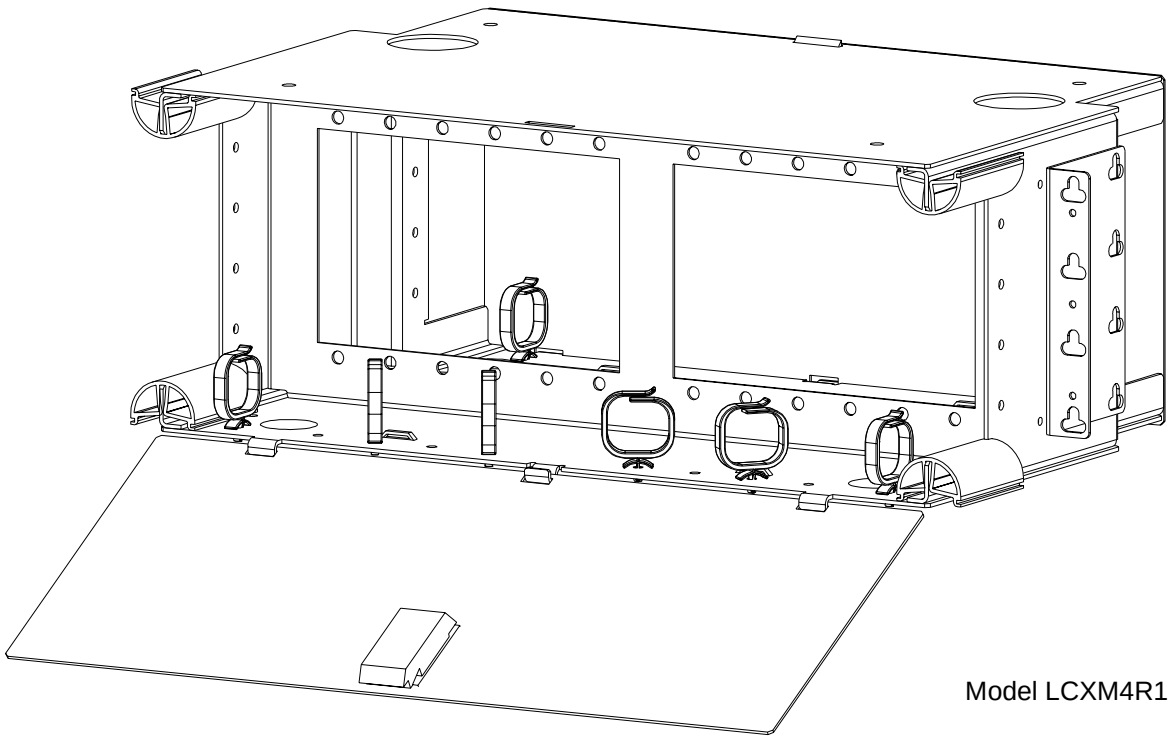
LCX Patch Panel — 48 Terminations
(Shown With Standard Entry Arcs)

LCX Patch Panels With Factory-Installed Adapters
(Adapters Supplied with Front & Rear Adapter Plugs, Not Shown)



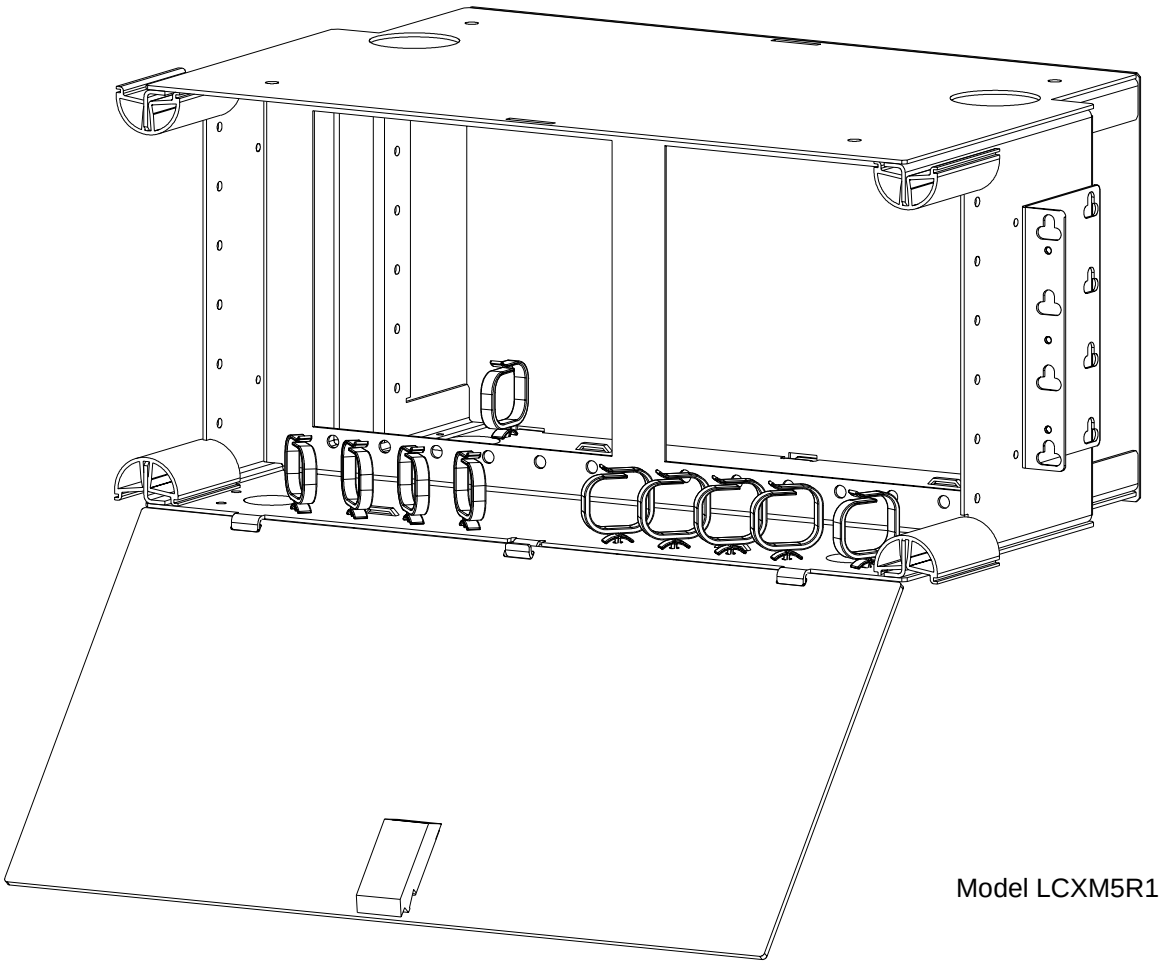
Model LCMX3R2

LCX Patch Panel — 3RU — for 8, 6-Adapter Packs & Modules
(Shown With Standard Entry Arcs)



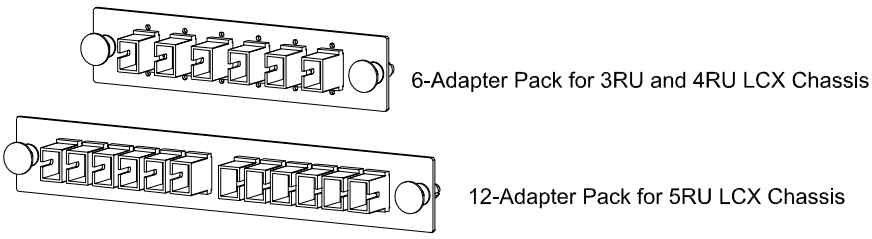
Model LCXM4R1

LCX Patch Panel — 4RU — for 12, 8-Adapter Packs & Modules
(Shown With Standard Entry Arcs)



Model LCXM5R1

LCX Patch Panel — 5RU — for up to 12, 12-Adapter Packs & Modules
(Shown With Standard Entry Arcs)

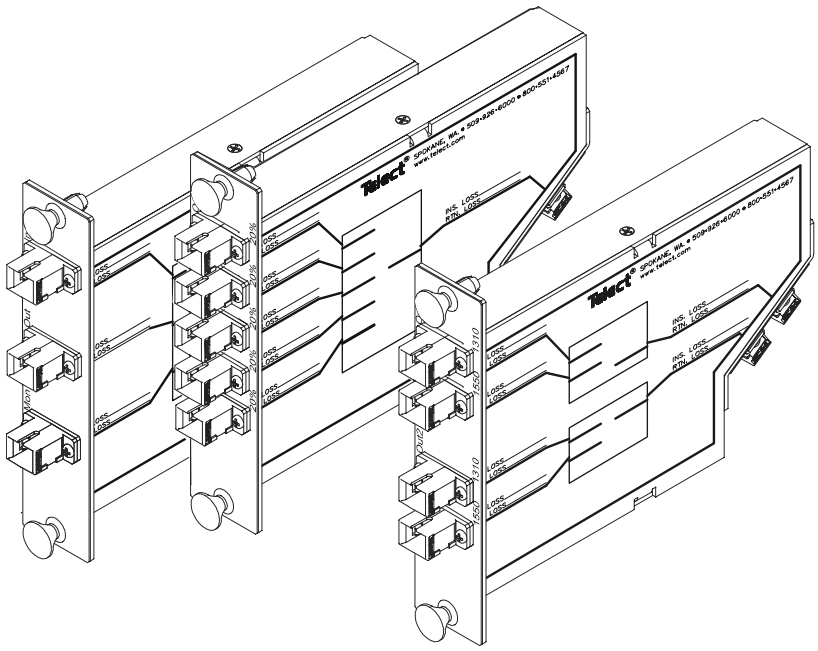


Adapter Packs
(Adapters Supplied with Front & Rear Adapter Plugs, Not Shown)

SPECIAL FUNCTION MODULES

Unadapterized LCX Fiber Patch Panels can be configured on-site with adapter packs and special function modules.

Telect offers a full line of standard-size Wavelength Division Multiplexing (WDM) modules and splitter modules that can be used in place of adapter packs. Some special-function Telect modules are illustrated below. Call Telect at 1-509-926-6000, 1-800-551-4567 (domestic), or telect.com for detailed information.



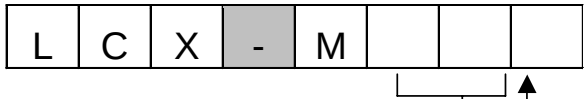
WDM & Splitter Modules, Examples
(Adapters Supplied with Front & Rear Adapter Plugs, Not Shown)

MODEL NUMBER CONFIGURATORS

LCX Chassis Without Patch Adapters (LCXM)

Modular Panel

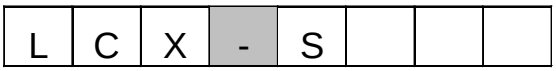
The Modular panel is designed as a scalable solution to support patch plates, couplers, splitters or other Value Added Modules (VAMS).



Nominal Capacity		
52	5.25” Chassis	3RU
70	7” Chassis	4 RU
90	9” Chassis	5RU

Mounting	
1	19-Inch Standard
F	19-Inch Flush
2	23-Inch Standard
E	ETSI Flush

LCX Chassis With Splice Trays (LCXS)



Nominal Capacity		
48	48 Terminations	5.25" (3RU)
72	72 Terminations	7" (4 RU)
96	96 Terminations	7" (4RU)
14	144 Terminations	7" (4RU)

Mounting	
1	19-Inch Standard
F	19-Inch Flush
2	23-Inch Standard
E	ETSI Flush

Splice Panel

The splice panel is available in the listed densities. It is a standard chassis with a drawer system integrated within.

LCX Chassis With Patch Adapters (LCXP)

Patch Panel

The patch panel offers the users a termination point for cross connect and interconnect applications. Typically a jumper will be connected through the front another jumper attached to the back. Occasionally a Multifiber cable will be terminated and attached at the factory. See below (Patch Panel with Multifiber Cable)

Nominal Capacity		
48	48 Terminations	5.25" (3RU)
72	72 Terminations	7" (4 RU)
96	96 Terminations	7" (4RU)
14	144 Terminations	7" (4RU)

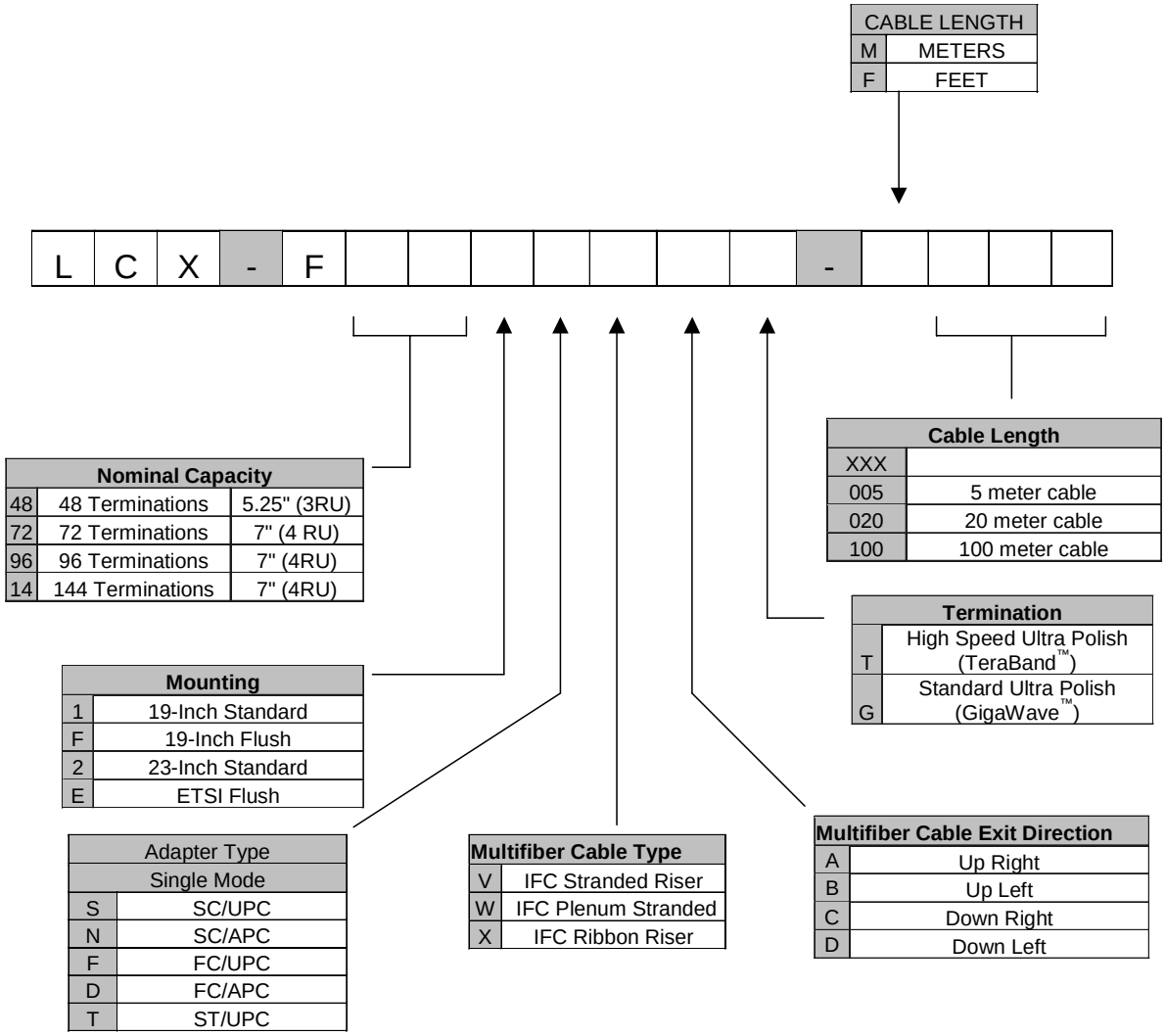
Mounting	
1	19-Inch Standard
F	19-Inch Flush
2	23-Inch Standard
E	ETSI Flush

Adapter Type	
Single Mode	
S	SC/UPC
N	SC/APC
F	FC/UPC
D	FC/APC
T	ST/UPC

LCX Chassis With Patch Adapters & Cabling (LCXF)

Patch Panel with Multifiber Cable

A standard Patch panel may include a Multifiber cable in either a 48, 72, 96 or two 72 cables terminated and attached at the factory.



CABLE LENGTH	
M	METERS
F	FEET

Nominal Capacity		
48	48 Terminations	5.25" (3RU)
72	72 Terminations	7" (4 RU)
96	96 Terminations	7" (4RU)
14	144 Terminations	7" (4RU)

Cable Length	
XXX	
005	5 meter cable
020	20 meter cable
100	100 meter cable

Termination	
T	High Speed Ultra Polish (TeraBand™)
G	Standard Ultra Polish (GigaWave™)

Mounting	
1	19-Inch Standard
F	19-Inch Flush
2	23-Inch Standard
E	ETSI Flush

Adapter Type	
Single Mode	
S	SC/UPC
N	SC/APC
F	FC/UPC
D	FC/APC
T	ST/UPC

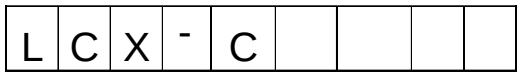
Multifiber Cable Type	
V	IFC Stranded Riser
W	IFC Plenum Stranded
X	IFC Ribbon Riser

Multifiber Cable Exit Direction	
A	Up Right
B	Up Left
C	Down Right
D	Down Left

LCX Combo: Splice Trays & Patch Adapters (LCXC)

Combination Panel

The combination panel integrates both a patch and splice chassis into a single unit (2 chassis bolted together). Customers will purchase this for an on-frame splicing solution, or in a space-constrained environment.



Nominal Capacity		
48	48 Terminations	5.25" (3RU)
72	72 Terminations	7" (4 RU)
96	96 Terminations	7" (4RU)
14	144 Terminations	7" (4RU)

Mounting	
1	19-Inch Standard
F	19-Inch Flush
2	23-Inch Standard
E	ETSI Flush

Adapter Type	
Single Mode	
S	SC/UPC
N	SC/APC
F	FC/UPC
D	FC/APC
T	ST/UPC

SPECIFICATIONS

Overall Dimensions

Overall SAE and metric dimensions are shown on Pages 1-17 through 1-19 for all LCX Fiber Splice/Patch Panels.

Environment

Temperature:	-55ºC to +85ºC, operating and non-operating
Humidity:	0% to 95% and noncondensing, operating and non-operating

Certification

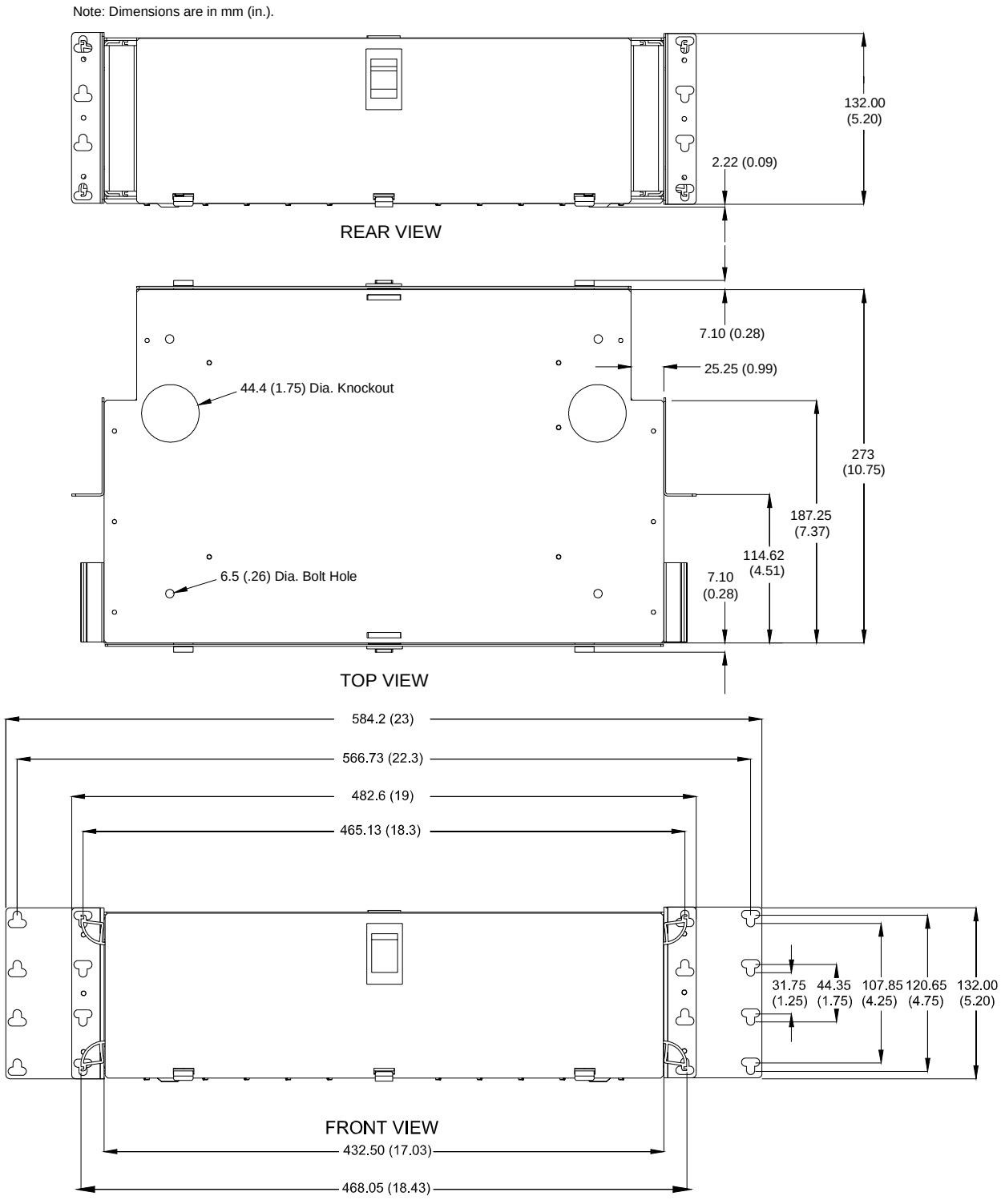
UL 60950

CE EN 60950

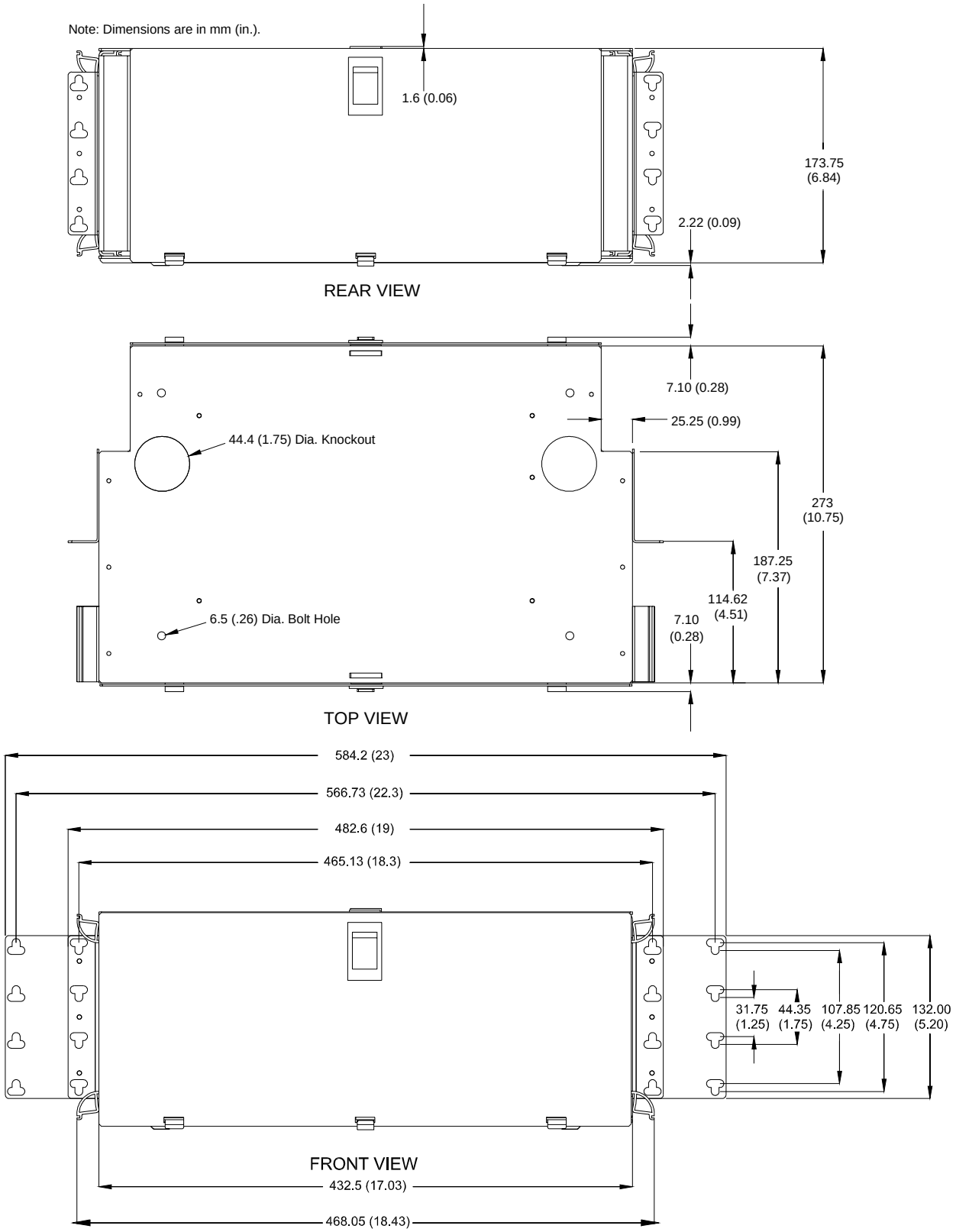
Bellcore GR-63-CORE

Bellcore GR-1089-CORE

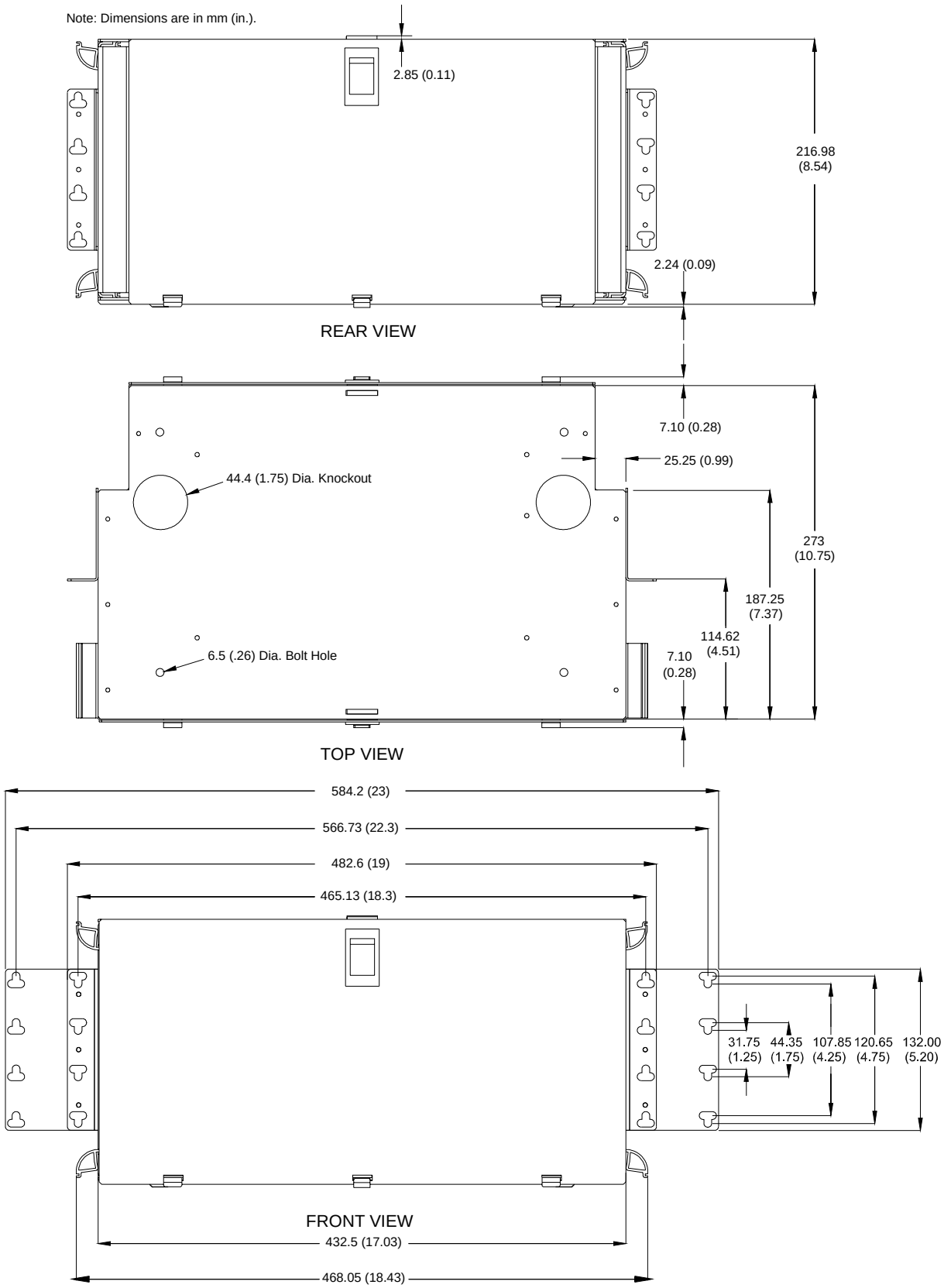
ETSI EN 300 019-2-(1,2,3)



3RU LCX Chassis
(Shown With 19/23-in. Rack Bracket Installed for a Nominal 5-in. Extension)



4RU LCX Chassis
(Shown With 19/23-in. Rack Bracket Installed for a Nominal 5-in. Extension)



5RU LCX Chassis
(Shown With 19/23-in. Rack Bracket Installed for a Nominal 5-in. Extension)

2 Applications

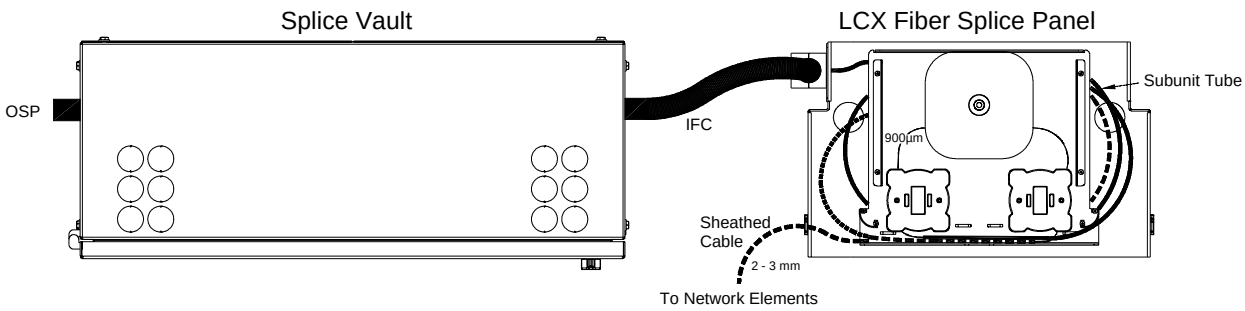
This section covers fundamental cross-connection and interconnection techniques using Telect's LCX Fiber Panels.

NOTE

Stranded or ribbon fiber should always enter or leave LCX panels in tied-down tubes, sheathed cable, or flex tubing.

INTERCONNECTING IFC TO NETWORK ELEMENTS

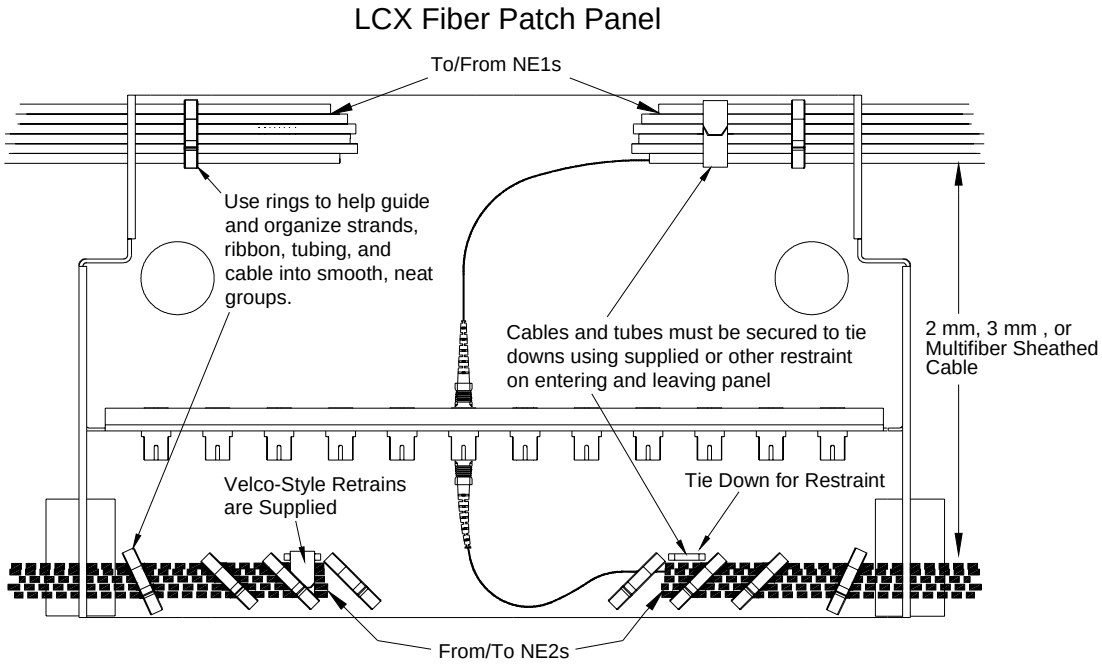
The illustration that follows shows a simple interconnection scheme wherein OSP is spliced at a vault to IFC plenum or riser cable which, in turn, is spliced at an LCX Fiber Splice Panel to the network elements.



Interconnecting/Splicing Facility Cable to Network Elements

INTERCONNECTING NETWORK ELEMENTS

In the following illustration, fiber from one set of network elements is interconnected to a second set.

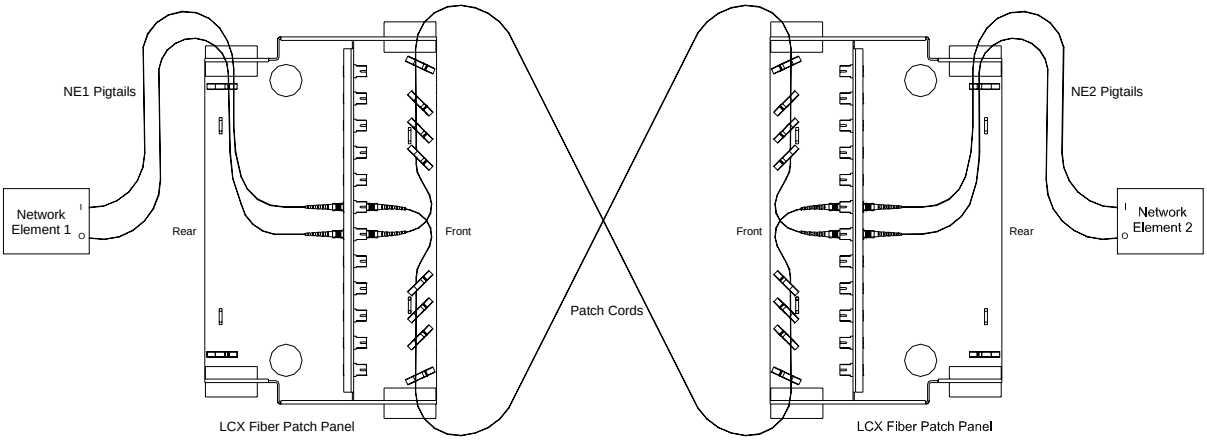

LCX Fiber Patch Panel
To/From NE1s
Use rings to help guide and organize strands, ribbon, tubing, and cable into smooth, neat groups.
Cables and tubes must be secured to tie downs using supplied or other restraint on entering and leaving panel
2 mm, 3 mm , or Multifiber Sheathed Cable
Velco-Style Retrains are Supplied
Tie Down for Restraint
From/To NE2s

Interconnecting Network Elements

CROSS-CONNECTING NETWORK ELEMENTS

In a variation of "Interconnecting Network Elements" NE1s and NE2s are connected to the rear of two LCX Fiber Patch Panels with the fronts reserved for patch cords to cross-connect the two.

The following illustration shows a stylized version of this application.



Cross-Connecting Network Elements

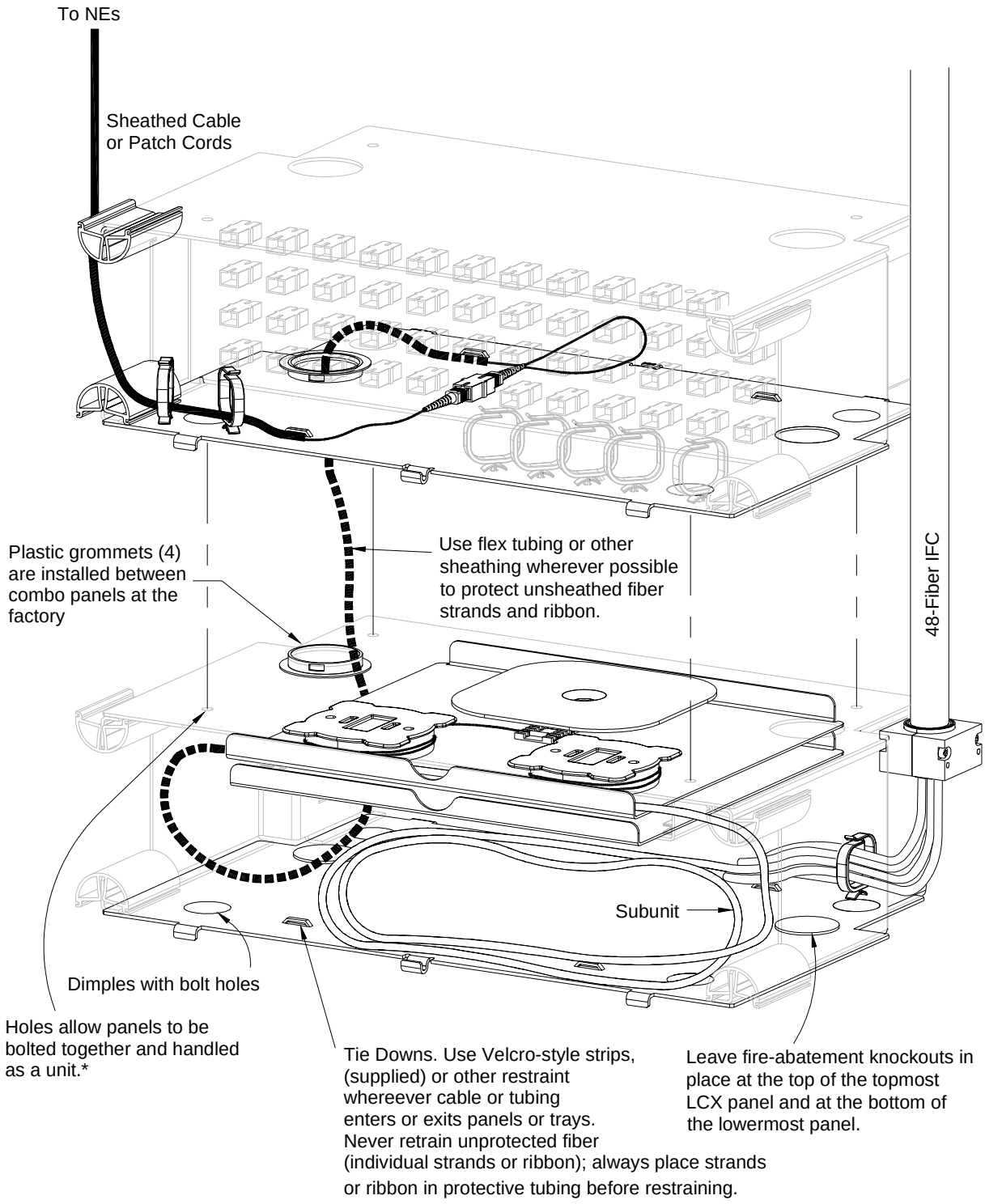
CROSS-CONNECTING COMBINATIONS

LCX Fiber Splice and Patch Panels can be used in combination to cross-connect IFC to network elements.

The following illustration shows a 48-fiber LCX Combination Panel (a 48-fiber LCX Splice Panel bolted to a 48-fiber LCX Patch Panel). After the incoming IFC is spliced, the fiber strands are passed through the 1½ in. (38.1 mm) diameter hole in the top of the splice shelf to the patch shelf. Notice that plastic grommets (supplied) are used to protect an unsheathed fiber strand passing through holes to an upper panel.

NOTE

If you create your own combination LCX Splice and Patch Panel onsite, remember to remove knockout plugs at the top and bottom of LCX panels before installing panels in racks. (Knockouts can be removed and plastic grommets can be installed after panels are racked, but it's easier before panels are racked.) Avoid removing the knockouts on the top of the top most and bottom of the bottom most LCX panels. The knockout plugs provide fire abatement.



* Combination LCX panels (patch panel on top; splice panel on bottom) are bolted together at the factory.

Cross-Connecting IFC to Network Elements

INTERCONNECTING & CROSS-CONNECTING ALONG WITH SPECIAL FUNCTION MODULES

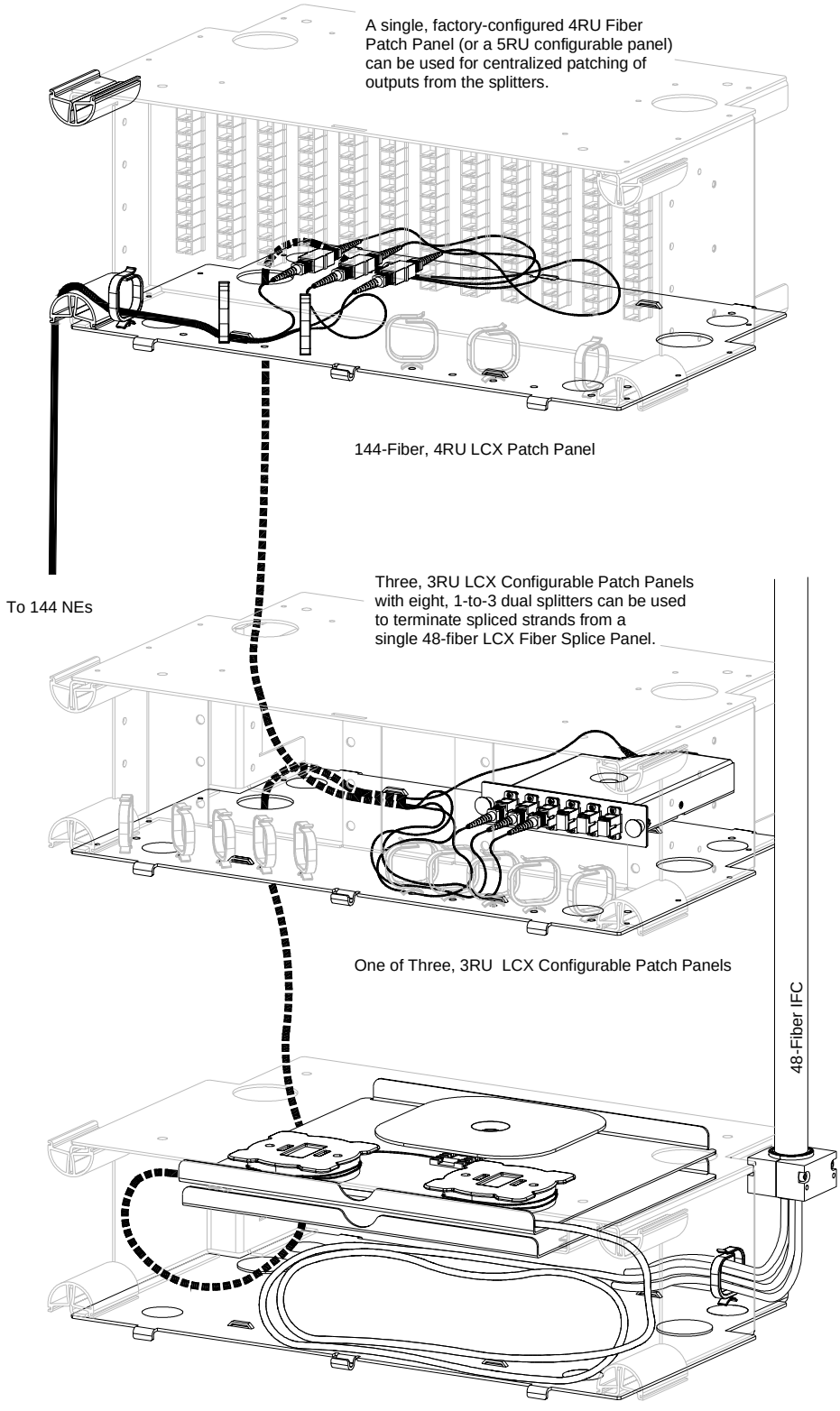
Wavelength Division Multiplexing (WDM) and splitter modules can be used in LCX panels.

The illustration that follows show one way a 48-fiber IFC is spliced and then interconnected via splitters/WDMs to network elements.

Notice that three, 3RU LCX Configurable Panels with dual, 1-to-3 splitters (or dual WDMs) are required for splitting/demultiplexing the 48 incoming fiber signals.

Dedicated LCX Patch Panels can be used to interconnect/cross-connect the split/demultiplexed signals with the network elements. In such case,

- splitting 48 signals three ways requires a 4RU LCX Patch Panel with 144 adapters (or a 5RU LCX Configurable Patch Panel with the same number of adapters)
- demultiplexing 48 signals into two wavelengths requires a 4RU LCX Patch Panel with 96 adapters (or a 5RU LCX Configurable Patch Panel).


A single, factory-configured 4RU Fiber Patch Panel (or a 5RU configurable panel) can be used for centralized patching of outputs from the splitters.
144-Fiber, 4RU LCX Patch Panel
To 144 NEs
Three, 3RU LCX Configurable Patch Panels with eight, 1-to-3 dual splitters can be used to terminate spliced strands from a single 48-fiber LCX Fiber Splice Panel.
One of Three, 3RU LCX Configurable Patch Panels
48-Fiber IFC
48-Fiber, 3RU LCX Fiber Splice Panel

Interconnecting/Cross-Connecting Along with WDM/Splitter Modules

3 Panel Installation

INSTALLATION CONSIDERATIONS

WARNING

WARNING! Fiber cables transmit invisible infrared light. To avoid eye damage or blindness, never look directly into fibers or connectors.

WARNUNG! Faserkabel übertragen unsichtbares Infrarotlicht. Um eine Schädigung der Augen oder Blindheit zu vermeiden, schauen Sie nicht direkt in die Fasern oder Stecker.

ADVERTENCIA ! Los cables de fibra transmiten luz láser o infrarroja invisible. Para evitar lesiones oculares o ceguera, nunca mire directamente a las fibras o conectores.

ADVERTISSMENT ! Les câbles à fibres transmettent un rayon laser ou une lumière infrarouge invisible. Pour éviter toute lésion occulaire ou cécité, ne regardez jamais directement dans les fibres ou dans les connecteurs.

ALERT

ALERT! This product must be installed and maintained only by qualified technicians.

ALERT

ALERT! These instructions presume you have verified that the Telect equipment being installed is compatible with the rest of the system, including power, ground, circuit protection, signal characteristics, equipment from other vendors, and local codes or ordinances.

Location & Space

LCX Fiber Panels are configured at the factory for either —

- standard 19 in., 23 in., or ETSI racks;
- WECO and EIA spacing on 19 in. and 23 in. brackets;
- face flush with front rack flange or nominal 5 in. extension beyond front rack flange.

Plan the input/output, upward/downward (cable feed) layout of each panel and its position in the rack before beginning LCX panel installation. If you plan to pass fiber strands, cable, and/or tubing through the knocked-out holes in the tops and bottoms of the panels, the panels should be mounted in contiguous vertical rack spaces.

Tools & Equipment

No special tools required.

INSPECTION

Telect is not liable for shipping damage.

Keep the container until you have checked equipment operation. If you experience any kind of problem, call Telect's Customer Service Department. Use the original, undamaged container if you are instructed to return a panel to Telect.

If a shipping container is damaged, keep it for the carrier's inspection. Notify the carrier and call Telect's Customer Service Department at **1-800-551-4567 or 1-509-926-6000**

INSTALLATION PROCEDURE

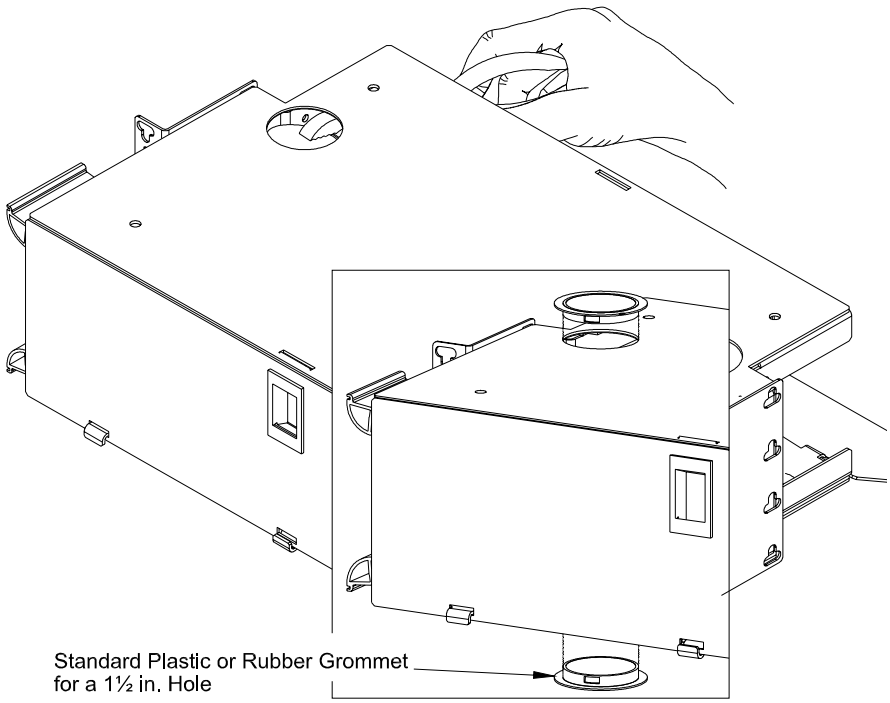
Prepare, mount, and insert modules and cable management rings in all panels in a rack before cabling any panels in the rack.

1. If applicable, if you plan to pass fiber strands, cables, and/or tubing through the 1½ in. (38.1 mm) diameter holes in the tops and bottoms of panels, see the Notes below and then knock out the applicable fire-abatement plugs covering these holes, as shown in the fol-

lowing illustration. Insert standard grommets for 1½ in. holes in place of plugs.[1]

NOTES

- *Avoid removing fire-abatement plugs on the top of the top most and bottom of the bottom most panel.*
- *Plugs can be knocked out when the panels are in place on the rack. But plug removal is easiest before racking panels.*



Removing Knockouts & Installing Plastic Grommets

2. If applicable, install *optional* entry/exit kit at the front and/or rear corners of the panel.

   An optional entry/exit kit can be used in place or along with the eight split arcs at the front and rear corners of the panel.

   Three kits are offered, each containing mounting plates and hardware:

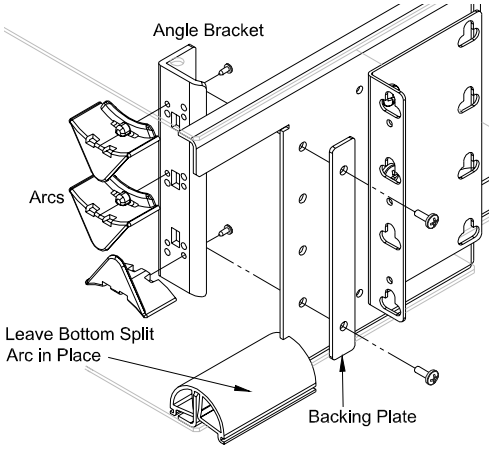
   - Arc Kit
   - Hanger Kit
   - Hook Kit

1. LCXC Fiber Splice and Patch Panels have plastic grommets already installed between the combination panels.

To install an arc kit, see the Note and procedure that follows:

NOTE

Arcs are attached to the angle-shaped mounting bracket using a thread-forming screw and an anti-rotation boss. The bracket contains two sets of screw and boss holes so that each arc can be mounted with the arrow-shaped keeper flange pointing either up or down.



a. Remove the split arc at the top of the applicable corner entry/exit.

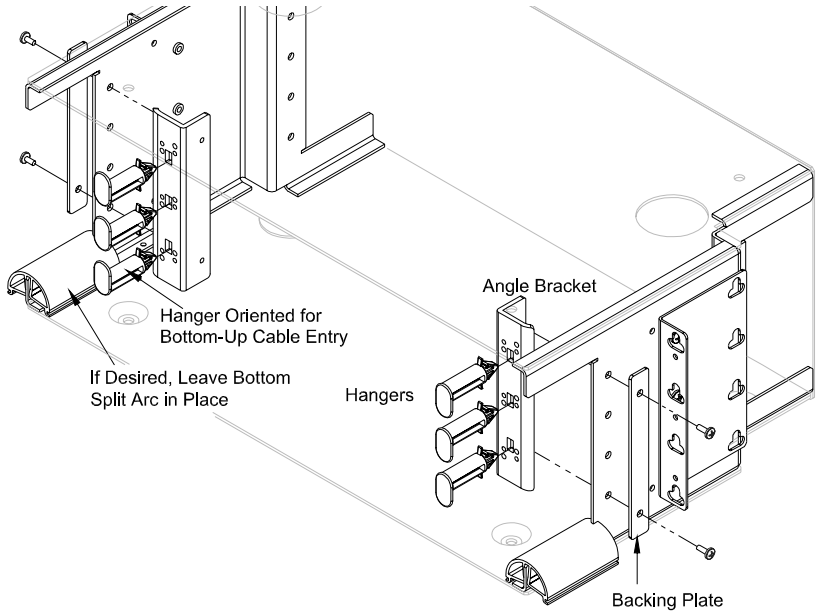
   Leave the split arc at the bottom in place, as shown in the preceding illustration.

b. Use the three thread-forming Phillips head screws (screws with cross-recessed heads) to attach the arcs to the angle bracket.

   Normally, the arrow-shaped keeper flange of the top two arcs point down and the bottom one points up. For flange clearance, the middle and bottom arcs must use a different set of screw and boss holes.

c. Use the two Phillips head machine screws along with the flat backing plate to secure this arc assembly to the panel.

To install a hanger kit, proceed as follows:



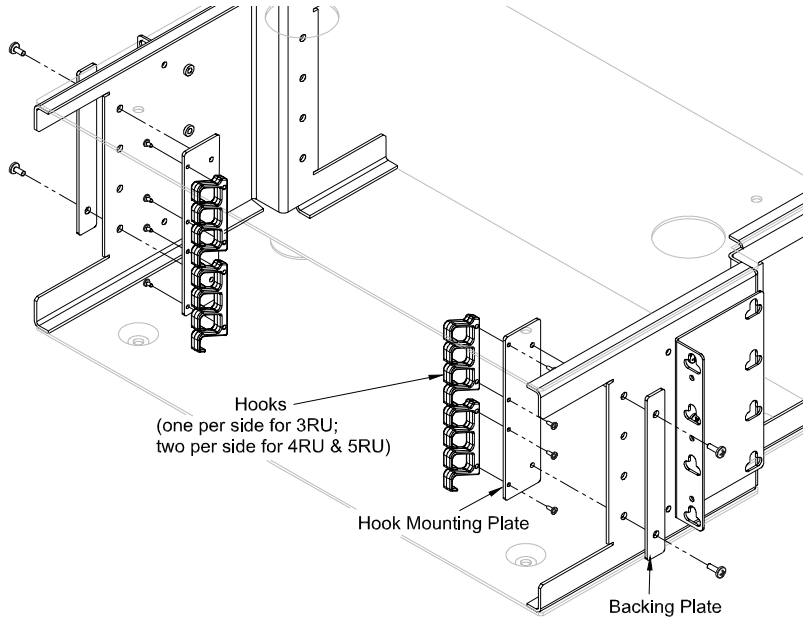
a. Remove the split arc at the top of the applicable corner entry/exit.

   If desired, for bottom-up cable routing, leave the split arc at the bottom in place, as shown in the preceding illustration.

b. Use the two Phillips head machine screws (screws with cross-recessed heads) to secure the angle bracket and flat backing plate to either side of the panel sidewall, as shown.

c. Decide on the orientation of the hangers (for bottom-up or top-down cable routing) and then insert one by one into the rectangular holes in the angle-shaped bracket.

To install a hook kit, proceed as follows:



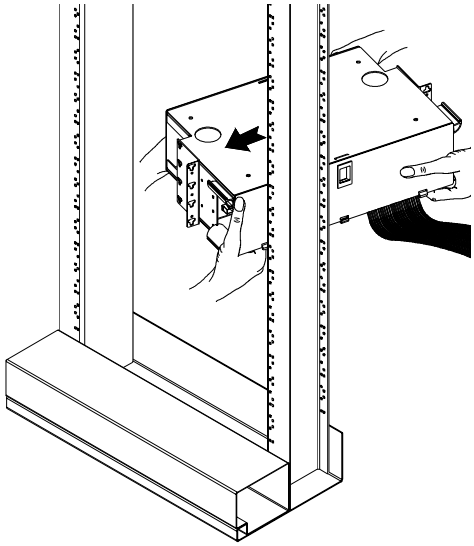
a. Remove the split arc at the top and bottom of the applicable corner entry/exit.

b. Use the two Phillips head machine screws (screws with cross recessed heads) to secure the hook mounting plate and flat backing plate to either side of the panel sidewall, as shown.

c. Use two thread-forming screws to secure each set of hooks to the hook mounting plate.

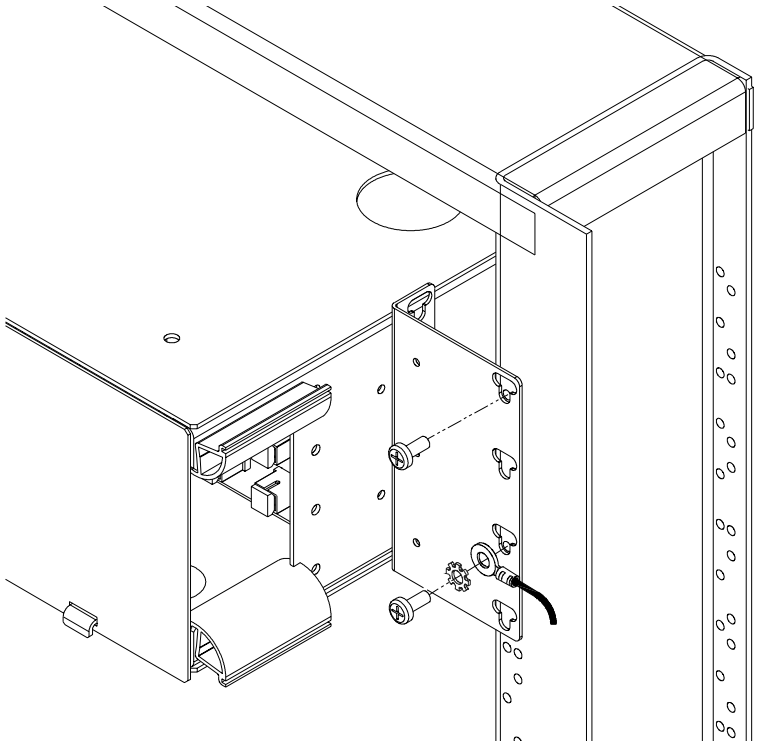
   Hooks are mounted to the inboard side of the mounting plate.

3. If applicable, for pre-cabled LCX patch panels, place the panel and pigtail spool/coil at the rear of the rack, remove shipping restraints, uncoil pigtails, and then pass the panel through the rack to the front.



4. Mount each panel to rack using four, 12-24, thread-forming mounting screws (supplied, two per side), as shown in the following illustration. Torque to 35 in.-lbs (4.29 N•m.).

   For one of the mounting screws, include a ground lug and star washer. (Use one ground lug with #14 AWG stranded wire per chassis.)



Mounting LCX Panel to Rack

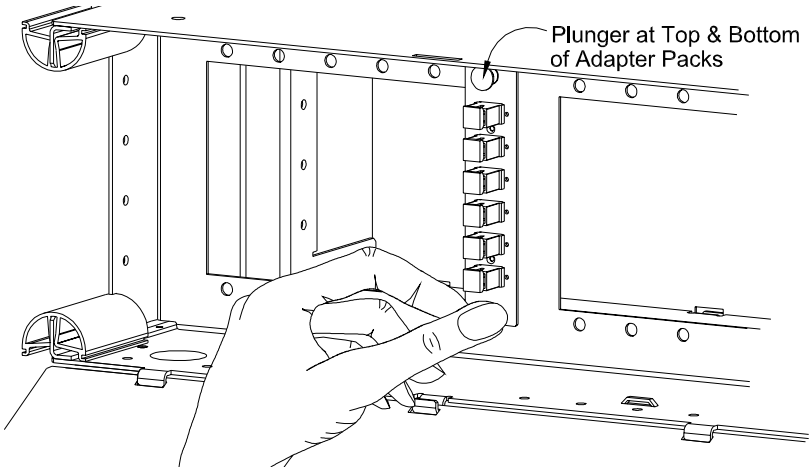
NOTE

Each shelf of an LCX Fiber Splice/Patch Combination Panel must be grounded separately.

5. If applicable, install adapter packs and/or special function modules in configurable LCX Fiber Patch Panel.

   The following illustration shows a 6-adapter pack being installed in a 4RU LCX Fiber Configurable Patch Panel.

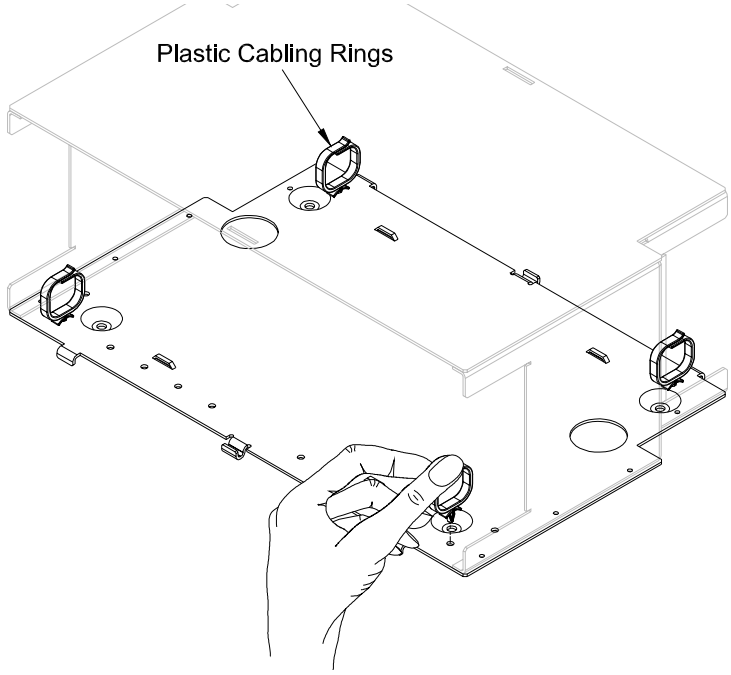
   Push in quick-connect plungers at either end of faceplate to lock pack or module in bulkhead.



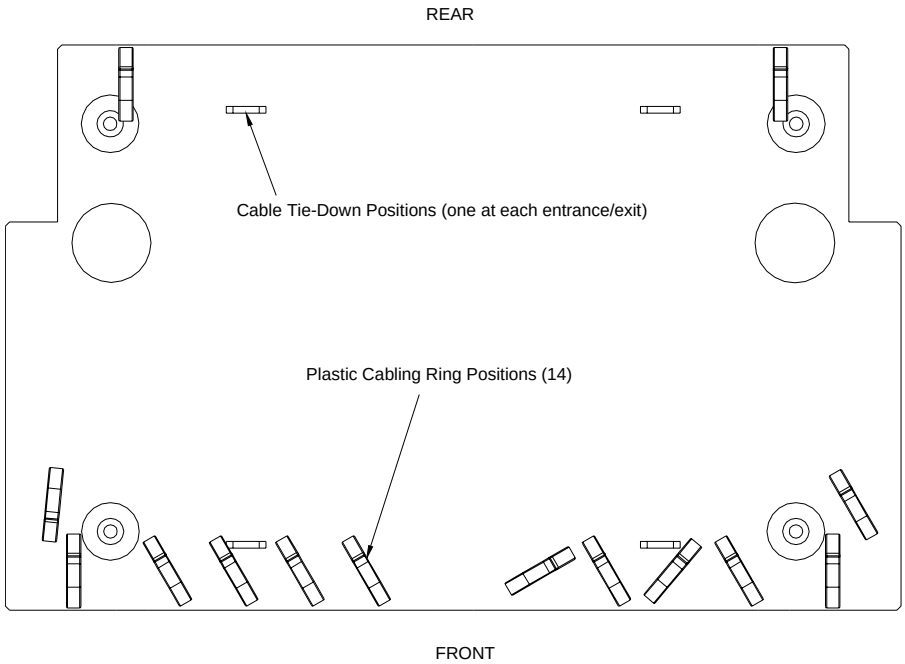
Installing Adapter Pack & Special Function Modules

6. Place a plastic cabling ring at each of the four corners of the chassis, as shown in the following illustrations.

   Rings can be added and moved around later during cabling. The rings not only serve as corrals for fiber cable but also as guideposts. Cables can be inserted in the split rings or routed around the rings.



Inserting Cabling Rings



Cable Restraint Layout (Top View of Chassis Bottom)

4 Fiber Installation

WARNING

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ADVERTISSMENT ! Les câbles à fibres transmettent un rayon laser ou une lumière infrarouge invisible. Pour éviter toute lésion occulaire ou cécité, ne regardez jamais directement dbase of the Main or InterBay Storage Panels.

SPLICING

Splicing begins with installation of the IFC at the rear of the LCX Fiber Splice Panel.

Each stranded or ribbon IFC subunit contains up to 12 fibers and each LCX splice tray handles up to 24 splices — two subunits of fiber.

Pairs or groups of tubes containing stranded or ribbon fiber enter the designated tray at one of the front corners (with the other corner reserved for corresponding fibers originating from network elements). Tubes from

the IFC and cables originating from the network elements are tied down near the front of the splice tray floor.

The unprotected strands or ribbon from the tied-down tubes and cables are wound several times around the two spools on the tray. One of the spools is for the strands or ribbon from the IFC and the other for the network element leads. The loose ribbon or strands are then spliced (interconnected) with the resulting splices placed in one of the two, 12-position splice holders on the tray.

The bottom of the LCX Fiber Splice Panel is used for storing coils of excess tubes and cables.

The paragraphs that follow contain installation and routing procedures required for splicing IFC to network elements:

- Installing & Routing IFC Fiber and
- Installing & Routing Network Element Fiber

Installing & Routing IFC Fiber

An optional cable clamp is required for installing IFC to an LCX Fiber Splice Panel. (See Accessories, Section 6.)

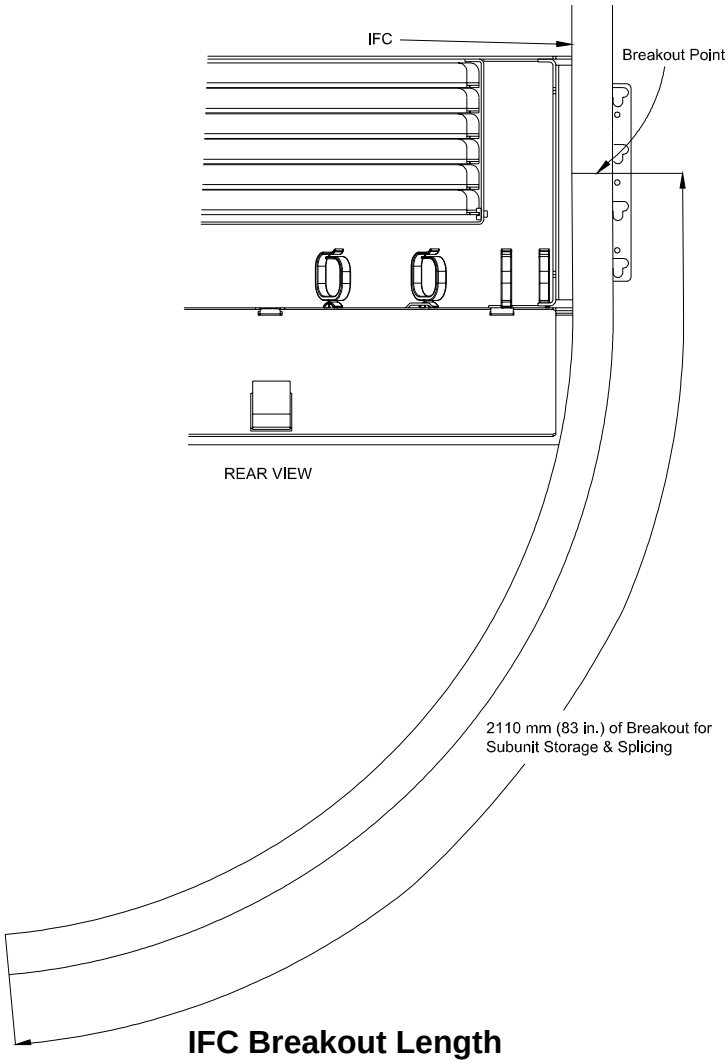
1. Route IFC to a rear corner entrance of the LCX Fiber Splice Panel, as shown in the following illustration.

   IFC can be routed from the bottom up or top down at either rear corner of the splice panel.

NOTE

Coiling, routing, and storage of fiber from IFC and network elements work best if the IFC and network element leads exit/enter the splice panel at either the same side of the panel (IFC at the rear and network fiber at the front) or at the two rear corners (one rear corner for the IFC and the other for the network fiber).

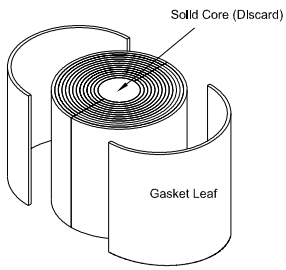
2. Measure off an additional 2110 mm (83 in.) and then trim off excess IFC.
3. Before clamping IFC to panel, strip away sheathing from this last 2110 mm of IFC to expose subunits.
4. For stranded cable, strip away leading 610 mm (24 in.) of tubing to expose 900 µm fiber.
5. Assemble cable clamp, as shown in illustration on Page 4-4.

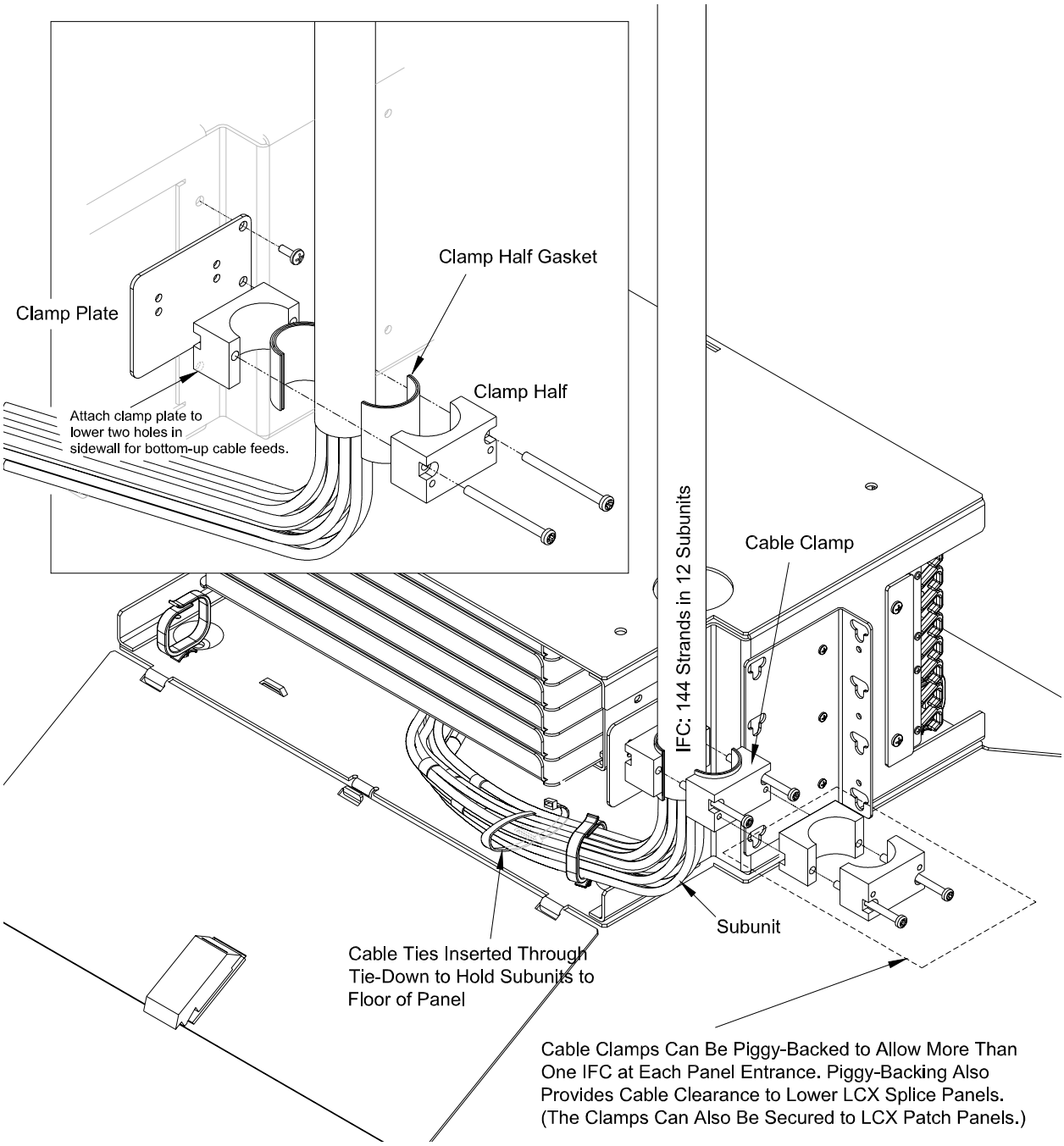


IFC Breakout Length

Each IFC clamp consists of clamp halves that fit around the IFC at the end of the sheathing. Different sizes of IFC are accommodated using various layers of gasket padding between the cable and the clamp halves.

The gasket padding kit contains a cylinder of gasket leaves, as shown on the right. Measure the diameter of the IFC and then remove and discard that much from the interior of the cylinder. The gasket halves that remain will be used between the clamp halves and the IFC, as shown in the following illustration.




Clamp Plate
Clamp Half Gasket
Clamp Half
Attach clamp plate to lower two holes in sidewall for bottom-up cable feeds.
IFC: 144 Strands in 12 Subunits
Cable Clamp
Subunit
Cable Ties Inserted Through Tie-Down to Hold Subunits to Floor of Panel
Cable Clamps Can Be Piggy-Backed to Allow More Than One IFC at Each Panel Entrance. Piggy-Backing Also Provides Cable Clearance to Lower LCX Splice Panels. (The Clamps Can Also Be Secured to LCX Patch Panels.)

Installing IFC

6. For unprotected ribbon fiber, place 1½ m (59 in.) of flex tubing over exposed ribbon.

   The end of the flex tubing should be pushed back to the IFC clamp.

7. Select pairs or groups of tubing for each tray. Tape or tie these together and allow tubes to hang out the front of the panel for splicing.

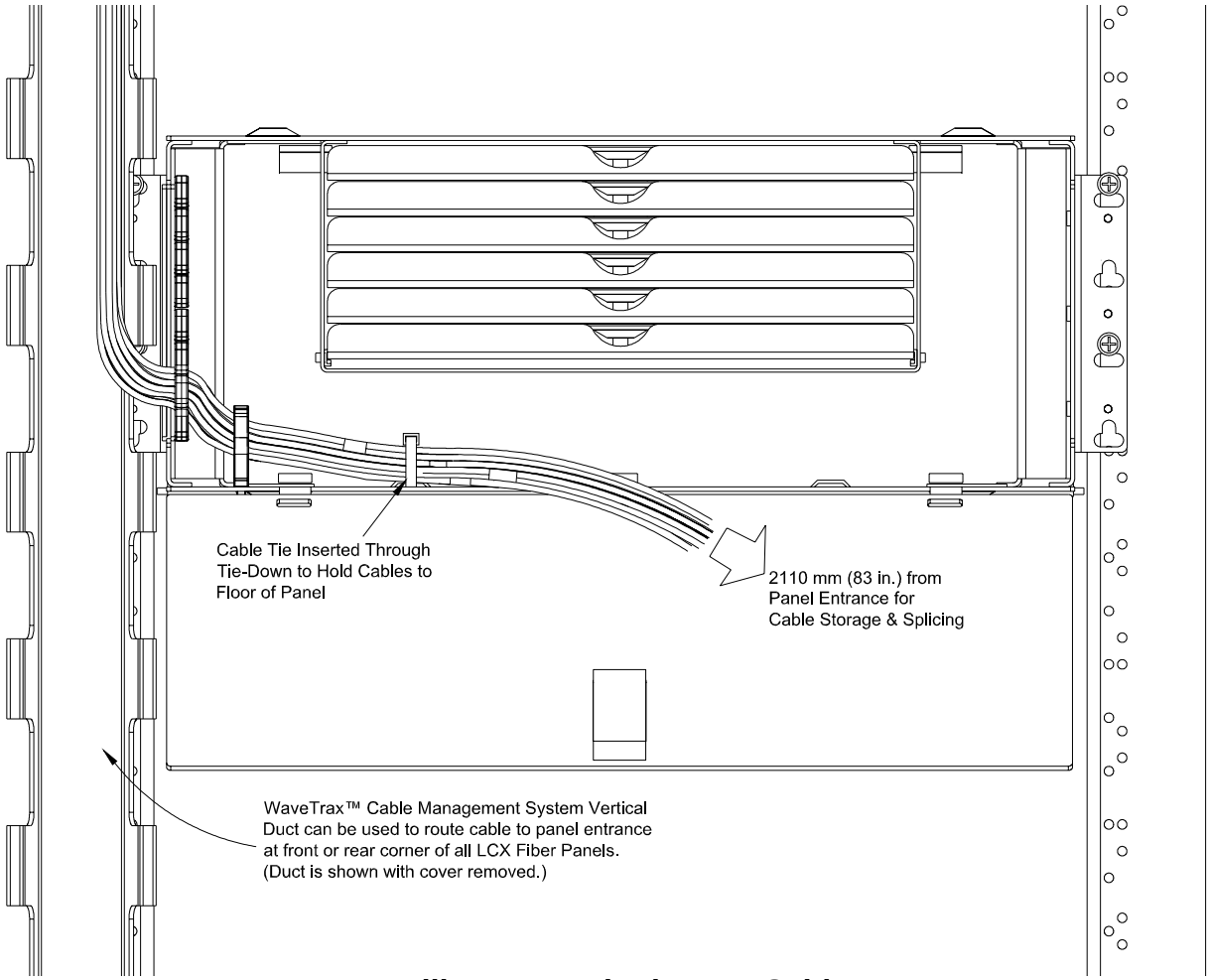
8. As shown in the preceding illustration, place tubes in plastic ring at panel entrance and then use supplied cable ties (or other restraint) to tie down tubes to floor of panel.

Installing & Routing Network Element Fiber

Network element fiber cable enters the panel at either the rear corner opposite the IFC or one of the front corners.

1. Route cable to a corner entrance of the LCX Fiber Splice Panel, as shown in the following illustration.

   Network element leads can be routed from the bottom up or top down at either a rear or front corner of the splice panel.


Cable Tie Inserted Through
Tie-Down to Hold Cables to
Floor of Panel
2110 mm (83 in.) from
Panel Entrance for
Cable Storage & Splicing
WaveTrax™ Cable Management System Vertical
Duct can be used to route cable to panel entrance
at front or rear corner of all LCX Fiber Panels.
(Duct is shown with cover removed.)

Installing Network Element Cables

NOTE

Coiling, routing, and storage of fiber from IFC and network elements work best if the IFC and network element leads exit/enter the splice panel at either the same side of the panel (IFC at the rear and network fiber at the front) or at the two rear corners (one rear corner for the IFC and the other for the network fiber).

2. Measure off an additional 2110 mm (83 in.) and then trim off excess cable.
3. Strip away leading 610 mm (24 in.) of cable sheathing to expose either stranded or ribbon fiber.
4. Select pairs or groups of cable for each tray. Tape or tie these together and allow cables to hang out the front of the panel for splicing.
5. As shown in the preceding illustration, place cables in plastic ring at panel entrance and then use supplied cable ties (or other restraint) to tie down cables to floor of panel.

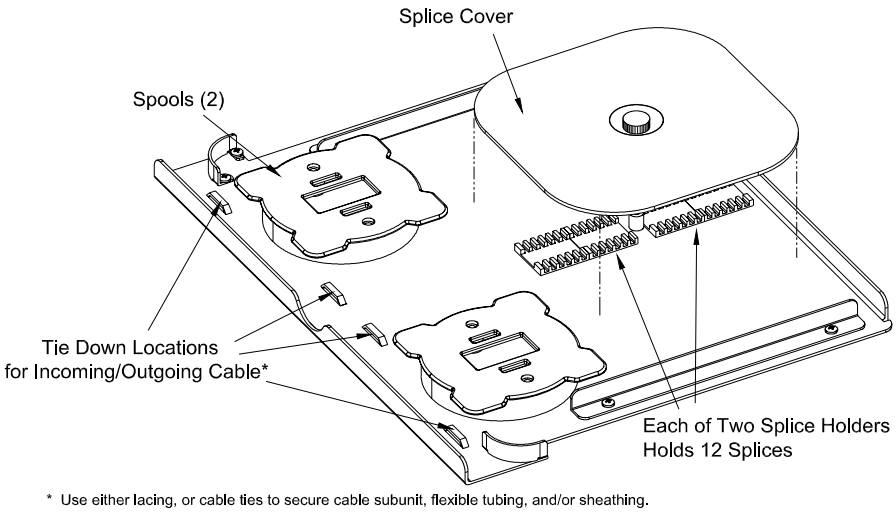
Splicing

Start with the bottom most splice tray and work up.

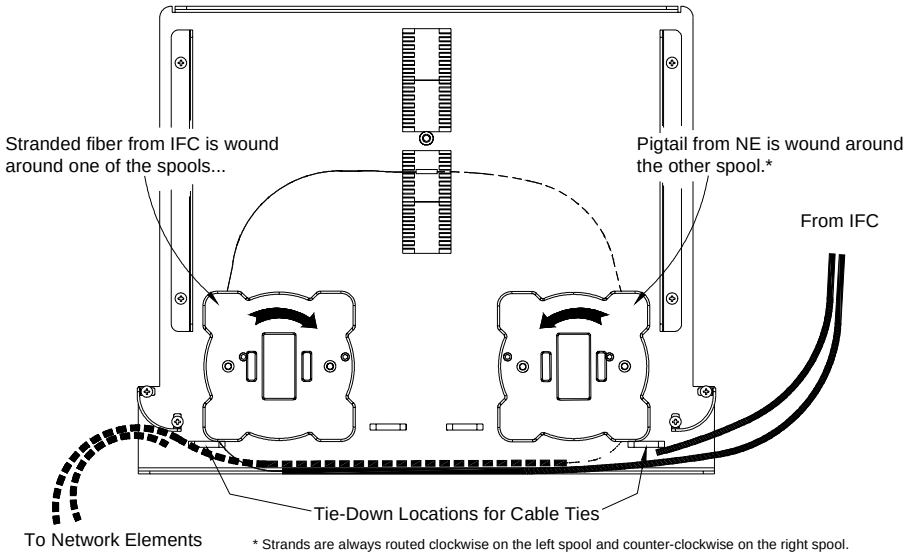
1. Locate splicing unit within about 1½ m (~5 ft) of panel.
2. Remove tray from panel and remove splice cover, as shown in the following illustrations.
3. Select a pair or group of tubes and cables for splicing.
4. Use cable ties or other restraint to secure tubes and cables to floor of tray.

   Note that strands or ribbon always emerge from cables or tubes at the tie down furthest from its tray entrance.

5. Wrap the unprotected strands or ribbon around the nearby adjacent spool.
6. Make splices, place in holder, and then re-attach splice cover.
7. Fill out tray label and affix to front of tray.
8. Place tray in panel and then coil tubing and cables, and lay them flat on floor of panel.


Splice Cover
Spools (2)
Tie Down Locations
for Incoming/Outgoing Cable*
Each of Two Splice Holders
Holds 12 Splices
* Use either lacing, or cable ties to secure cable subunit, flexible tubing, and/or sheathing.

Splice Tray (Right Corner View)


Stranded fiber from IFC is wound
around one of the spools...
Pigtail from NE is wound around
the other spool.*
From IFC
Tie-Down Locations for Cable Ties
To Network Elements
* Strands are always routed clockwise on the left spool and counter-clockwise on the right spool.

Splice Tray (Fiber Routing)

PATCHING

LCX Fiber Patch Panels can be used to either interconnect or cross-connect network elements: normally,

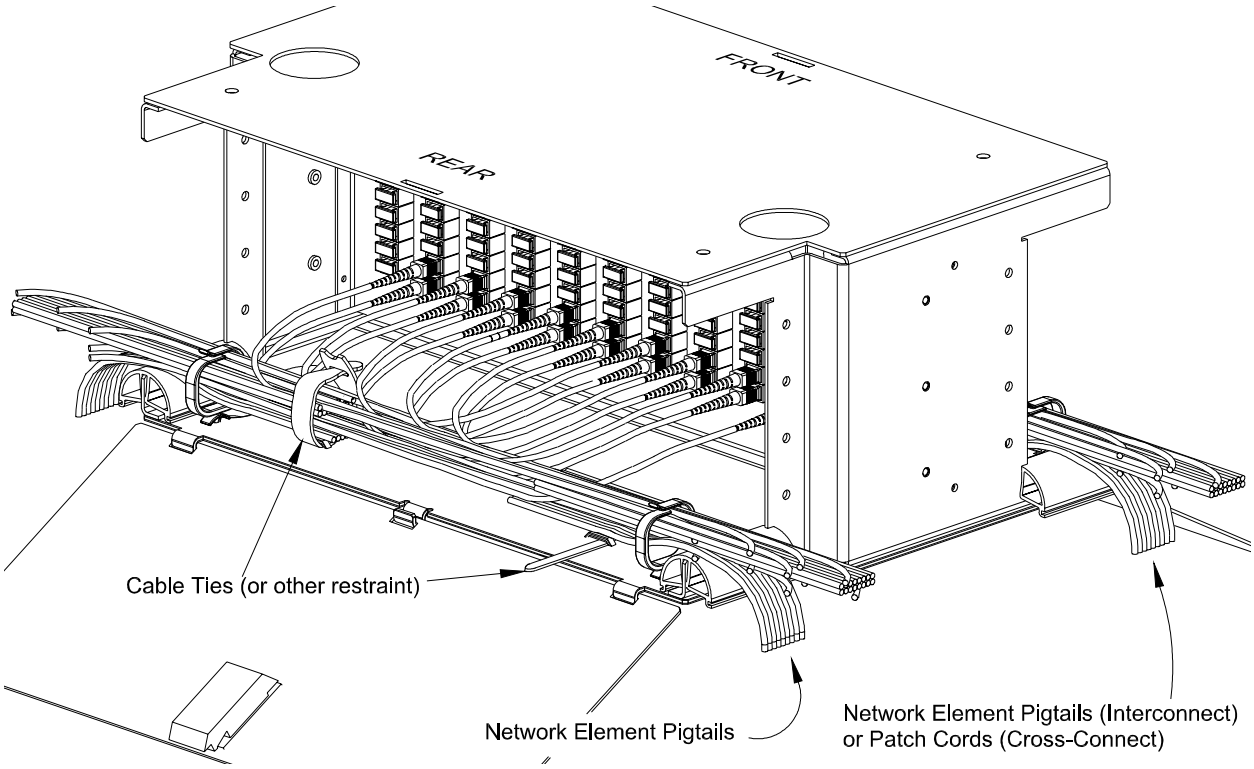
- *To interconnect IFC splices from the LCX Fiber Splice Panel to network elements; or*
- *To interconnect one system of network elements to another, as in a demarcation; or*
- *To cross-connect network elements within the same system.*

In all cases, pigtails (connectorized leads) from the splice panel or network elements are connected to adapters on one side of the patch panel's bulkhead. Corresponding adapters on the other side of the bulkhead are used for interconnecting or cross-connecting complementary network element pigtails or patch cords.

Pigtails and patch cords[1] can enter the LCX Fiber Patch Panel at any of the four corners and are confined by a plastic ring and tie-down. Additional plastic rings assist in routing the pigtails and patch cords to the designated adapter.

To install pigtails or patch cords,

1. Refer to the following illustration and route pigtails or patch cords through a plastic ring located at the panel entrance.
2. In the panel's front compartment, use additional plastic rings to sort and route pigtails or cords from the tie-down to the adapter.
3. Pull out or unscrew the adapter plug and insert the pigtail or patch cord connector.
4. After installing pigtails/patch cords use cable ties or other restraints to tie down the pigtails/cords to the floor of the panel.



Installing Interconnects or Cross-Connects in an LCX Fiber Patch Panel

1. Normally, the patch cords enter at a front corner and connect to adapters on the front of the bulkhead.

5 *Service*

⚠ WARNING

WARNING! Fiber cables transmit laser or invisible infrared light. To avoid eye damage or blindness, never look directly into fibers or connections.

WARNUNG! Faserkabel übertragen unsichtbares Infrarotlicht. Um eine Schädigung der Augen oder Blindheit zu vermeiden, schauen Sie nicht direkt in die Fasern oder Stecker.

ADVERTENCIA ! Los cables de fibra transmiten luz láser o infrarroja invisible. Para evitar lesiones oculares o ceguera, nunca mire directamente a las fibras o conectores.

ADVERTISSMENT ! Les câbles à fibres transmettent un rayon laser ou une lumière infrarouge invisible. Pour éviter toute lésion occulaire ou cécité, ne regardez jamais directement dbase of the Main or InterBay Storage Panels.

(!) ALERT

ALERT! This product must be installed and maintained by qualified technicians.

OWNER MAINTENANCE

Telect's LCX Fiber Panels need no preventive maintenance.

TECHNICAL SUPPORT

By e-mail: getinfo@telect.com
By phone: 888-821-4856 or 509-921-6161

IN-WARRANTY SERVICE

Contact your Telect equipment distributor, or call a Telect Customer Service Representative:

1-800-551-4567
1-509-926-6000

Telect will repair or replace defective products within the limits of the warranty. See “Repacking for Shipment” in this section.

NOTE

Call a Customer Service Representative for a Return Material Authorization (RMA) before returning any equipment.

OUT-OF-WARRANTY SERVICE

The procedure for out-of-warranty service is the same as for in-warranty service, except that Telect charges a processing fee, and you must submit a Purchase Order along with a Return Material Authorization (RMA) before returning equipment. Call a Customer Service Representative for help getting these forms.

The processing fee guarantees a repair estimate and is credited against actual material and labor costs.

REPACKING FOR SHIPMENT

1. Tag the equipment showing owner’s name, address, and telephone number, together with a detailed description of the problem.
2. Use the original shipping container if possible. If you do not have it, package the equipment in a way to prevent shipping damage.

Include the RMA inside the container and legibly print the RMA number on the outside of the package, near the shipping address.

3. Insure the package.

NOTE

Telect is not liable for shipping damage.

6 Accessories

LCX Accessories and replacement items are listed in the following table. Contact Telect for price and availability.

Item	Description	Part Number
6-Adapter Packs[1]	SC (Duplex), Multimode	LP-6MMSCD
	SC (Zirconia), Multimode	LP-6MMS
	SC (with 8° Polish), Single Mode	LP-6SMN
	SC (Duplex), Single Mode	LP-6SMSCD
	SC (Zirconia), Single Mode	LP-6SMS
	FC (Zirconia), Multimode	LP-6MMF
	FC (with 8° Polish), Single Mode	LP-6SMD
	FC (Zirconia), Single Mode	LP-6SMF
	FC-SC, Single Mode	LP-6SMF-S
	ST (Zirconia), Multimode	LP-6MMT
	ST (Zirconia), Single Mode	LP-6SMT-P
	ST-SC, Single Mode	LP-6SMT-S
	Blank (without adapters)	LP-6BLNK
12-Adapter Packs[2]	SC (with 8° Polish), Single Mode	LP-12SMN
	SC (Duplex), Single Mode	LP-12SMSCD
	SC (Zirconia), Single Mode	LP-12SMS
	FC (with 8° Polish), Single Mode	LP-12SMD

Item	Description	Part Number
12 Pack (Cont)	FC (Zirconia), Single Mode	LP-12SMF
	FC-SC, Single Mode	LP-12SMF-S
	ST (Zirconia), Single Mode	LP-12SMT
	ST-SC Single Mode	LP-12SMT-S
IFC Clamp Kit	Clamp, mtg plate, gasket, & hardware	KIT-CLMP
Entry/Exit Cable Management	Radius Cable Management Arc Kit[3]	KIT-CMGMT1
	Isolation Hook Kit[4]	KIT-CMGMT2
	Cable Management Hanger Kit[5]	KIT-CMGMT3
Designation Cards[6]	48-Port Designation Card	KIT-LABEL48
	72-Port Designation Card	KIT-LABEL72
	96-Port Designation Card	KIT-LABEL96
	144-Port Designation Card	KIT-LABEL14
Transparent Front Doors	Smoked Plastic Door (5.25"H) for 3RU	KIT-LDOOR5
	Smoked Plastic Door (7"H) for 4RU	KIT-LDOOR7
	Smoked Plastic Door (9"H) for 5RU	KIT-LDOOR9
Network Relay Rack	19" Std (22"W x 12"D x 7’H), WHT	071-6000-0001
	23” Std (26"W x 12"D x 7’H), WHT	071-6000-0007
Relay Rack End Panel	12"D x 7’H (either side of rack), WHT	071-6000-0020
InterBay Management Panel	5"W x 7’H (either side of rack), WHT	071-6000-0023

1. Fits 3RU and 4RU LCXM chassis.
2. Fits 5RU LCXM chassis.
3. Kit contains three arcs, mounting plates, and hardware for each of two panel entries/exits. (Fits front or rear corners of 3, 4, and 5RU LCX panels.)
4. Kit contains two sets of plastic hooks, mounting plates, and hardware for each of two panel entries/exits. (Fits front or rear corners of 3, 4, and 5RU LCX panels. 3RU LCX panels can accommodate only one set of plastic hooks.)
5. Kit contains three hangers, mounting plates, and hardware for each of two panel entries/exits. (Fits front or rear corners of 3, 4, and 5RU LCX panels.)
6. Attaches to hangers located on inside face of LCX Fiber Patch Panel front door.

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